NIST Office of Weights and Measures (OWM) Analysis
Laws and Regulations (L&R)
2023 NCWM Interim Meeting Agenda

The NIST OWM Analysis is submitted to assist the Weights and Measures community as it deliberates on items before the Conference. OWM offers these comments and recommendations based upon information and input available as of the date of this report.

Language shown in bold face print by **~~striking out~~** information to be deleted and **<u>underlining</u>** information to be added. Requirements that are proposed to be nonretroactive are printed in ***bold faced italics***.

For additional information or assistance please contact a OWM Technical Advisor:

Ms. Lisa Warfield, L&R Committee, **lisa.warfield@nist.gov** or (301) 975-3308
Mr. David Sefcik, L&R Committee, **david.sefcik@nist.gov** or (301) 975-4868

Subject Series List for the Laws and Regulations Committee

Table A
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Table 1.
Glossary of Acronyms and Terms

Acronym	Term	Acronym	Term
API	American Petroleum Institute	NEWMA	Northeastern Weights and Measures Association
ASTM	ASTM International	NIST	National Institute of Standards and Technology
CC	Certificate of Conformance	NTEP	National Type Evaluation Program
CFR	Code of Federal Regulations	OWM	Office of Weights and Measures
CWMA	Central Weights and Measures Association	PALS	Packaging and Labeling Subcommittee
EPA	Environmental Protection Agency	S&T	Specifications and Tolerances
EPO	Examination Procedure Outline	SAE	SAE International
EV	Electric Vehicle	SWMA	Southern Weights and Measures Association
EVFE	Electric Vehicle Fueling Equipment	TG	Task Group
EVSE	Electric Vehicle Supply Equipment	THC	Tetrahydrocannabinol

Acronym	Term	Acronym	Term
FALS	Fuels and Lubricants Subcommittee	UETA	Uniform Electronic Transaction Act
FDA	Food and Drug Administration	UPLR	Uniform Packaging and Labeling Regulation
FTC	Federal Trade Commission	USNWG	U.S. National Work Group
ISO	International Organization for Standardization	UWL	Uniform Weighmaster Law
MOS	Method of Sale	WWMA	Western Weights and Measures
NCWM	National Conference on Weights and Measures		

Table 2. Reporting Structure
Source: Name and affiliation of submitter.
Submitter's Purpose and Justification: The submitter's concise statement as to the intent or purpose of this proposal. The justification describes the national importance, background on the issue, and may contain references to supporting data or documents. The justification may be summarized by OWM.
OWM Executive Summary: High level points that summarize the Technical Aspects of the item and recommendations pertaining to the Item Under Consideration.
Table 3. Summary of Recommendations
Item Under Consideration – The latest language that the Committee has moved forward as the Item membership is considering. OWM has applied the appropriate formatting according to NIST Handbooks.
NIST OWM Detailed Technical Analysis – A detailed analysis with background information and recommendations from the Office of Weights and Measures (OWM).
Summary of Discussions and Actions – An OWM summary of details and discussion on this Item. This includes discussion and decisions of the Standing Committee. This may also include information from sectors, trade associations, task groups, and subcommittees.
Regional Association Reporting – An OWM summarization of the Regional Association Meeting finalized reports. • Each region will be identified by their regional acronym along with the year and meeting. • The meeting within each region will be in chronological order.

Details of All Items
(In order by Reference Key)

WAM – Uniform Weights and Measures Law

WAM-23.1 Section 11. Powers and Duties of the Director

Source: NCWM Packaging and Labeling Subcommittee

Submitter's Purpose and Justification:

Add e-commerce compliance to the powers and duties of the Director. It has been suggested that if the e-commerce regulation is adopted for inclusion in NIST Handbook 130, expanding the powers and duties of the Director in the model Weights and Measures Law would be useful.

The most likely arguments against adoption of this proposal center on whether individual programs feel this section of the model law is too restrictive in defining the scope of a weights and measures program or if the membership concludes the E-commerce regulation is better published as a stand-alone NCWM standard.

OWM Executive Summary for WAM-23.1. Section 11. Powers and Duties of the Director

OWM Recommendation: OWM believes this item is developed. However, this should not proceed if OTH-22.1. Uniform Regulation for E-commerce Product Identity, Net Quantity, Responsible Party, and Price Information is not adopted. Therefore, this item should be placed into a block with OTH-22.1 so they can proceed through the conference together.

- States should consult with their legal counsel to determine if their state has authority to enforce the e-commerce regulation (if adopted) or whether having a (model) weights and measures law is needed.

- It is not necessary to use the title of NIST HB 130 within the model law. OWM recommends the following language:

  (s) have the authority to employ recognized procedures and regulations designated within the Uniform Regulation for E-commerce Product Identity, Net Quantity, Responsible Party, and Price Information.

- The Committee should consider blocking this with OTH-22.1. Uniform Regulation for E-commerce Product Identity, Net Quantity, Responsible Party, and Price Information. Until the E-commerce Regulation is adopted it would be premature to adopt this before a Regulation is in place.

Table 3. Summary of Recommendations							
WAM-23.1. – Section 11. Powers and Duties of the Director							
	V	**D**	**W**	**A**	**I**	**Notes***	**Comments**
Submitter							
OWM					✓		
CWMA	✓						
NEWMA				✓			
SWMA	✓						
WWMA	✓						
NCWM							

***Notes Key:**
1 – Submitted modified language
2 – Item not discussed
3 – No meeting held
4 – Not submitted on agenda
5 – No recommendation or not considered

Item Under Consideration:

Section 11. Powers and Duties of the Director

The Director shall:

. . .

(s) have the authority to employ recognized procedures and regulations designated within the NIST Handbook 130, Uniform Laws and Regulations in the Areas of Legal Metrology and Fuel Quality, E-Commerce Regulation.

NIST OWM Detailed Technical Analysis:

OWM recommends adoption of a proposed amendment to Section 11 "Powers and Duties of the Director" in the Uniform Weights and Measures Law to authorize the Director to adopt regulations that encompass the various aspects necessary to ensure e-commerce websites and other regulated e-commerce sales outlets comply with legal metrology requirements.

It is not necessary to use the title of NIST HB 130 within the regulation. OWM recommends aligning the title to reflect the E-commerce Regulation language.

(s) have the authority to employ recognized procedures and regulations designated within the Uniform Regulation for E-commerce Product Identity, Net Quantity, Responsible Party, and Price Information.

This item should be "blocked" with OTH-22.1. "Uniform Regulation for E-commerce Products". It is premature to add this to the handbook until a Uniform Labeling Regulation for E-commerce Products is adopted.

Regional Association Reporting:

Western Weights and Measures Association

At the 2022 WWMA, Mr. Floren (Los Angeles County, California), questioned whether this item was necessary, but supported it moving forward if needed to support other e-commerce proposals. Mr. Kevin Schnepp (CDFA/DMS) supported this item moving forward. The WWMA L&R Committee recommended Voting status based on the comments heard.

Central Weights and Measures Association

At the 2022 CWMA Interim Meeting, PALS Chair Guay commented this item should be subsection "s" rather than subsection "r" and notified Mr. Don Onwiler (NCWM) that it should be corrected prior to subsequent regional fall meetings. He indicated he believes this item is fully developed and ready for voting provided the additional e-commerce agenda item passes. Based on testimony and hearing no objections, the Committee believes this item is fully developed and ready for Voting status.

Southern Weights and Measures Association

At the 2022 SWMA Annual Meeting, Mr. Tim Chesser (Arkansas) expressed that he was puzzled; he felt all of this was already covered in Handbook 130 in the Weights and Measures Law. He said all this was already addressed in Arkansas. He does not believe that a whole section dedicated to e-commerce is needed.

Ms. Lisa Warfield (NIST OWM) commented an additional item OTH 22.1 is under consideration which aligns with the item. Ms. Warfield agreed with Mr. Chesser that this is not needed and is more reactionary to another item that was recently adopted in the handbooks. She suggested that if it goes through, make it align with OTH 22.1 (package and labeling in the e-commerce).

The Committee considers this item is fully developed and recommended this moving forward with a Voting status contingent upon item OTH-22.1. The Committee considers that these two items should move forward as a block and that the titles of the regulations would need to be aligned.

Northeastern Weights and Measures Association

During the 2022 NEWMA Interim Meeting, Ms. Lisa Warfield (NIST OWM) commented that this is a new item and believes it should be assigned to PALS since it encompasses more than labeling (ex. pricing, unit pricing and graphic illustrations). She further commented that states need to determine if there is a need to modify this section. She concluded her remarks by asking the Committee to consider blocking this item with agenda item OTH-22 so they can move together. She also asked that the Committee reconsider changing the title of this item to be consistent with OTH-22. The Committee recommended this item be blocked with OTH 22 and be Assigned to PALS.

WML – Uniform Weighmaster Law

WML-23.1 Section 10. Certificate: Required Entries

Source: NIST Office of Weights and Measures

Submitter's Purpose and Justification:

Allow the use of electronic signatures on certificates. The Uniform Weighmaster Law (UWL) is broadly worded that it does not specify whether cursive or other handwriting be used to sign tickets. Section 10. "Certificate: Required Entries," of the UWL reads that a weigh ticket, when properly filled out and signed, shall be accepted as evidence of the accuracy of the recorded measurement. A full identification of the weighmaster is required by Section 10(b)(1) that requires the name and license number of the weighmaster be furnished and Section (10)(b)(12) requires that signature to be of the public weighmaster who determined the weight, measure, or count.

OWM has reviewed the UWL, NCWM Annual Meeting Reports, and information provided by other states and recommends that Section 10 allow the use of electronic signatures. Another justification for allowing the use of electronic signatures is they are widely permitted under both Federal and State Laws. At the Federal level the 2000 Electronic Signatures in Global and National Commerce Act which is in 15 U.S. Code § 7001 provides that electronic signatures on contracts, or other records relating to such transactions may not be denied legal effect, validity, or enforceability solely because they are in electronic form.

OWM has also learned that most states adopt the Uniform Electronic Transactions Act (UETA **https://www.uniformlaws.org/home**) which promotes the use of electronic signatures and provides adequate protections for buyers and sellers alike. While both the Federal and State exempt some business and applications the purpose of these laws is to prevent fraud and abuse while facilitating the use of electronic signatures to promote modern business and communications practices. The UETA was developed by the National Conference of Commissioners on Uniform Laws in 1999 to establish the legal equivalence of electronic records and signatures with paper writings and manually signed signatures, to remove barriers to electronic commerce. There are 47 and the District of Columbia, U.S. Virgin Islands, Puerto Rico which have adopted the UETA. Three states have not adopted UETA but do have their own state statues - New York, Illinois, and Washington.

The submitter requested that this be a Voting Item in 2022.

OWM Executive Summary for WML-23.1 – Section 10. Certificate: Required Entries

OWM Recommendation: OWM believes this item is fully developed and ready for Voting status.

- OWM has learned that 49 states, the District of Columbia, U.S. Virgin Islands have adopted the UETA most states adopt the Uniform Electronic Transactions Act (UETA **https://www.uniformlaws.org/home**) which promotes the use of electronic signatures. New York has not adopted UETA but has enacted a similar statue.

- This is adding a "Note" to Section 10 to inform the user that electronic signatures are acceptable if a State has a digital signature statute.

Table 3. Summary of Recommendations							
WML-23.1. – Section 10. Certificate: Required Entries							
	V	**D**	**W**	**A**	**I**	**Notes***	**Comments**
Submitter	✓						
OWM	✓						
CWMA	✓						
WWMA	✓						
SWMA	✓					1	
NEWMA	✓						
NCWM							

***Notes Key:**
1 – Submitted modified language
2 – Item not discussed
3 – No meeting held
4 – Not submitted on agenda
5 – No recommendation or not considered

Item Under Consideration:

Section 10. Certificate: Required Entries

(a) The certificate, when properly filled out and signed [see ***Section 10, Note 2***] shall be prima facie evidence of the accuracy of the measurements shown.

(b) The design of and the information to be furnished on a weight certificate shall be prescribed by the Director and will include, but not be limited to, the following:

(1) the name and license number of the public weighmaster;

(2) the kind of commodity weighed, measured, or counted;

(3) the name of the owner, agent, or consignee of the commodity;

(4) the name of the recipient of the commodity, if applicable;

(5) the date the certificate is issued;

(6) the consecutive number of the certificate;

(7) the identification, including the identification number, if any, of the carrier transporting the commodity and the identification number or license number of the vehicle;

(8) other information needed to distinguish or identify the commodity from a like kind;

(9) the number of units of the commodity, if applicable;

(10) the measure of the commodity, if applicable;

(11) the weight [see ***Section 10 NOTE 1***] of the commodity and the vehicle or container (if applicable) broken down as follows:

i. the gross weight of the commodity and the associated vehicle or container;

ii. the tare weight of the unladened vehicle or container; or

iii. both the gross and tare weight and the resultant net weight of the commodity;

(12) signature [**see *Section 10, Note 2***] of the public weighmaster who determined the weight, measure, or count.

Section 10 NOTE 1: When used in this Law, the term "weight" means "mass." (See paragraph L. "Mass" and "Weight" in Section I. Introduction, of NIST Handbook 130 for an explanation of these terms.) (Note Added 1993)

***Section 10 NOTE 2*: Electronic signatures are acceptable if a State has a digital signature statute (Uniform Law Commission, Electronic Transactions Act [UETA] www.uniformlaws.org) (Added 20XX)**

NIST OWM Detailed Technical Analysis:

OWM has learned that 49 states, the District of Columbia, and U.S. Virgin Islands have adopted the UETA. Most states adopt the Uniform Electronic Transactions Act (UETA **https://www.uniformlaws.org/home**) which promotes the use of electronic signatures. New York has not adopted UETA but has enacted a similar statue.

The Uniform Weights and Measures Law is currently broadly worded and recommends the allowance of electronic signatures which are widely permitted under both Federal and State Law.

UETA Section 7 gives legal recognition to electronic signatures, records, and contracts.

(a) A record or signature may not be denied legal effect or enforceability solely because it is in electronic form.

(b) A contract may not be denied legal effect or enforceability solely because an electronic record was used in its formation.

(c) If a law requires a record to be in writing, an electronic record satisfies the law.

(d) If a law requires a signature, an electronic signature satisfies the law.

OWM supports modifying the Uniform Weights and Measures Law to allow for the use of electronic signatures.

Regional Association Reporting:

Western Weights and Measures Association

At the 2022 WWMA Annual Meeting, Mr. Kevin Schnepp (CDFA/DMS) supported this item moving forward provided a national security standard be developed to limit potential fraud. Mr. Kurt Floren (Los Angeles County, California) asked whether a security standard should be developed locally rather than nationally. Mr. Schnepp suggested a national standard for uniformity would be most appropriate. The WWMA L&R Committee recommended Voting status based on the comments heard.

Central Weights and Measures Association

At the 2022 CWMA Interim Meeting, no comments were heard on this item. The Committee believes this item is fully developed and ready for Voting status.

Southern Weights and Measures Association

At the 2022 SWMA Annual Meeting, Dr. Matthew Curran (Florida) commented that he was fine with the intent, especially in the age of digital signatures. He recommended that Section 10 Note 2 needed a semantic change to allow it to be broader and suggested the following change "statue that includes digital signatures". Ms. Lisa Warfield (NIST OWM) commented that this item had been previously brought forward several years ago, but this editorial change wasn't included in the handbooks. All but three states adopt the Uniform Electronic Transaction Act. Mr. Hal Prince (Florida) commented that Florida does not adopt WAM law since it does not affect them. He believes this is a state issue and should not be in the handbook and would like the item to be withdrawn.

The Committee concurred with Dr. Curran's comment. The SWMA L&R Committee moves the following modified language forward:

> ***Section 10 NOTE 2:*** **Electronic signatures are acceptable if a State has a statute that allows for digital and/or electronic signatures (Uniform Law Commission, Electronic Transactions Act {UETA} www.uniformlaws.org)**
>
> **(Added 20XX)**

With these changes the Committee considers this item fully developed and recommends it as a Voting Item.

Northeastern Weights and Measures Association

At the 2022 NEWMA Interim Meeting, Ms. Warfield commented that this modification is adding a "note" to Section 10 of the Weights and Measures Law which recognizes electronic signatures. OWM has learned that most states adopt the Uniform Electronic Transactions Act (UETA) which promotes the use of electronic signatures. She indicated 47 states, the District of Columbia, U.S. Virgin Islands, and Puerto Rico have adopted the UETA. The remaining three states – New York, Illinois, and Washington have their own state statutes recognizing electronic signatures. Mr. John McGuire (New Jersey) commented that the State of New Jersey has seen an increase in fraudulent certificates issued through weighmasters. He further indicated that the state is reviewing their requirements to determine if additional or different requirements are needed. Ms. Cheryl Ayer (New Hampshire) expressed concern that enforcement is difficult but supports the item moving forward as a Voting Item. Mr. Walt Remmert (Pennsylvania) agreed and supports the item as a Voting Item. Mr. Marc Paquette (Vermont) also supports the proposal as a Voting Item as does Mr. Jimmy Cassidy (Massachusetts). The Committee recommends Voting status for this item.

MOS – Uniform Regulation for the Method of Sale of Commodities

MOS-23.1 Section 1.12. Ready-to Eat Food, 1.12.2. Methods of Sale.

Source: Delaware Weights and Measures

Submitter's Purpose and Justification:

Bringing back the word "***single*** serving" to limit the size of a prepackaged item from being allowed to be sold with no weight declaration.

When the change was initially introduced in the 2018 edition of Handbook 130, the way I interpreted the new regulation was that with the removal of "**single servings**" it would then allow any package that is packaged on premises to be sold by count. With that being said, it would mean that anything in the store (packaged on site) that is ready to eat would no longer be required to have a net weight. This would apply to all deli, hot foods, produce, bakery, and seafood packaged products. Several others that I spoke with interpreted the regulation the same way I did initially. A year later, while taking a class in Gaithersburg, I brought up this issue and I was pointed to the second portion of the regulation that states: **If pre-packaged, the product shall have the appropriate statement of quantity set forth in the current edition of NIST Handbook 130, Uniform Packaging and Labeling Regulation (UPLR).** I had difficulty finding something specific in the UPLR that would override the statement **"in servings packed or prepared on the premises may be sold by weight, measure, or count"**, and at this point it became confusing if we should require a net weight on a pre-packaged item or not. More recently while taking a webinar, again I brought up this issue and the discussion was that the store would not need to put a net weight on the package. They could sell a tub of cut fruit as a "tub" of cut fruit.

I believe that the intent was to allow grocery stores to sell products like restaurants, such as a bucket of chicken at KFC needs no net weight, so it should be allowed that the grocery store should be able to sell a bucket of chicken with no net weight. This is understandable if the bucket is packaged at time of service from bulk, but if it is a bucket that is pre-packaged sitting on a shelf for the consumer to purchase, then it should have a net weight. Similar packages of potato salad that the store packages sitting next to a "National Brand" of potato salad should also have a net weight so the consumer can make a comparative value decision. Another example would be pre-packaged containers of cut fruit should have a net weight so the consumer can compare the price of the processed fruit over what the consumer could purchase the same fruit themselves and cut it at home.

In the past, the single serving size exception was a good way to define what needed a net weight and what didn't. A slice of cake didn't need a weight, but a ¼ slice or larger would need a net weight. Two cookies in a baggie or a sandwich wouldn't need a weight, but a box of cookies or a platter of sandwiches would. I am afraid that if the correct interpretation is, that all ready-to-eat food that does not need to be processed and is pre-packaged on site will not need a net weight. If true, it removes the ability of the consumer to make an informed decision on what is the best value.

The picture above is at an Acme location and the items shown are packaged on premises. The picture below is at a Shop Rite location and those items are pre-packaged and shipped in. If Acme is allowed to sell items by count only, but the items sold at Shop Rite must be sold by weight, then how can the consumer make a comparison as to which item is a better value.

The submitter acknowledges that businesses that are currently not putting a net weight on their ready to eat items larger than single serving sizes will have to correct their product labels to show the net weight. This may also result in having to install new scales to produce product labels.

The submitter requested that this be a Voting Item in 2023.

OWM Executive Summary for MOS-23.1 Section 1.12. Ready-to-Eat Food, 1.12.2. Methods of Sale.
OWM Recommendation: OWM does not believe this item has merit and recommends this item be withdrawn. • The title should not have "/" but a period. Should read 1.12.2. • In 2016, a Ready to Eat Task Group was chaired by OWM and was comprised of 14 regulatory officials and seven industry and trade association representatives. The method of sale and

OWM Executive Summary for MOS-23.1 Section 1.12. Ready-to-Eat Food, 1.12.2. Methods of Sale.

definition of "ready-to-eat" was significantly vetted prior to its last modification adopted in 2017, including a discussion on the use of eliminating the term "single serving".

- The submitter is implying within the justification that "ready-to-eat" would be applicable to all prepackaged type foods within the marketplace. The definition of "ready-to-eat" is used to apply the method of sale, which states it applies only to restaurant style food.
- Applying the term "single serving" would eliminate such items as whole chickens and pizza.

Table 3. Summary of Recommendations

MOS-23.1. – Section 1.12. Ready-to-Eat Food, 1.12.2. Methods of Sale

	V	D	W	A	I	Notes*	Comments
Submitter	✓						
OWM			✓				
CWMA	✓						
WWMA			✓				
SWMA			✓				
NEWMA			✓				
NCWM							

Item Under Consideration:

Amend Handbook 130 Uniform Regulation for the Method of Sale of Commodities as follows:

1.12. Ready-to-Eat Food.

…

1.12.1. Methods of Sale. – Ready-to-eat food sold from retail cases displaying product in bulk or in **single** servings packed or prepared on the premises may be sold by weight, measure, or count (i.e., by piece, portion, or serving). If pre-packaged, the product shall have the appropriate statement of quantity set forth in the current edition of NIST Handbook 130, Uniform Packaging and Labeling Regulation (UPLR).

(Amended 1993) (Amended 2017)

NIST OWM Detailed Technical Analysis:

In 2016, a Ready-to-Eat Task Group was formed to review the current language for ready-to-eat foods. This TG was comprised of 14 regulators, six grocery chains, and three stakeholders representing grocery

stores. The TG reviewed past history, current marketplace trends, and the Food and Drug Administration (FDA) **Guidance for Industry Nutrition Labeling of Standard Menu Items in Restaurants and Similar Retail Food Establishments Small Entity Compliance Guide**.

In evaluating the language, the TG believed that the term single-serving was too vague and believed it was appropriate to replace with the terms "sold by weight or count, and individual service" was appropriate. The ready-to-eat proposal is not meant to include all prepackaged products within a store. This is for food types sold within retail cases that display the product and are ready for immediate human consumption. This allows for grocery retailers to sell prepared style foods that are similar to fast food restaurants. To alleviate any confusion as to what ready-to-eat items are the TG prepared an example listing of products that were sold in the marketplace. Typically, examples are not provided within regulations, but the TG felt it was of great importance to assist regulators with interpreting the regulation. The regulation aligns with the current practices found within the grocery marketplace, delis, and similar like markets. If a retailer sells ready to eat food by net weight, they must also meet the requirement set forth in NIST HB 44, for direct sales [1.10]. Other type of products found within the store must meet the Uniform Packaging and Labeling Regulations (Section 11.1. Random Packages) that must declare a net weight, unit price, and the total price.

Additional history on this subject matter dates to 1958 when this was discussed at the 43rd NCWM Meeting. At that time, the terms "carry out meal" and "menu items" were used to provide illustrations of what the Committee intended to exempt from any specific method of sale. These broad terms allowed the individual jurisdiction to establish, according to its marketplace needs, policies or individual regulations to address which products had to be sold by weight, measure, or count. The key to applying the proposed requirement is to focus on how a product is advertised. For example, if a product is advertised in the same way as a food item is on a restaurant or fast-food outlet menu, it could be sold by weight, measure, or count**.**

This was an Item within the Report of the 76th – 77th NCWM (1991-1992), where the Committee recommended that Section 1.12. Ready-to-Eat Food be amended to permit sales of ready-to-eat food items by weight, measure, or count (count includes serving sizes such as small, medium, or large) if the food is sold from bulk or in single serving packages packed on the premises and ready for consumption. The traditional methods of sale required in retail grocery stores for ready-to-eat food items put grocers at a substantial competitive disadvantage compared to restaurants and fast-food outlets that sell the same or similar items. An industry representative testified that consumers want to purchase these foods in supermarkets but find it difficult to relate the cost per pound of a ready-to-eat item in the supermarket to the common method of sale used in a restaurant or fast-food establishment (for example, "by each".) When purchasing ready-to-eat items in the supermarket, most consumers do not compare the price per pound, for instance, to the unprepared product, but rather take the total cost of the meal into consideration. The Committee agreed that attempting to limit the definition to only items "prepared on the premises" was unreasonable because it would be impossible to enforce, especially if the term "prepared" is not defined. The Committee took the position that how the products are advertised and sold is the issue to be addressed, not where products are "prepared" or what constitutes "preparation." The Committee recognized that many items sold in restaurants, fast food outlets, and supermarkets are prepared in central kitchens and then distributed to the various retail outlets, and that this is the trend for the future. The Committee also decided that attempting to develop an all-inclusive list of products that could be sold as ready-to-eat food would be difficult because of the wide scope of products; in addition, it would be difficult to keep such a list current.

The Committee recommended adoption of the proposal although recognizing that this recommendation may not address all of the concerns raised by weights and measures officials and members of industry who are seeking guidance on this difficult issue. Several weights and measures officials indicated that limiting the exemption to food items sold from bulk or packaged in single-serving sizes would narrow the list of exempted products and still allow food stores to sell products using the same methods of sale as used by restaurants.

Below is language from FDA, which supported the proposed language developed by the Ready to Eat TG.

II.A.5. What are some examples of foods that general would be considered "restaurant-type food"?

Examples of food that generally would be considered restaurant-type food include: food for immediate consumption at a sit-down or quick service restaurant; food purchased at a drive-through; take-out and delivery pizza, hot pizza at grocery and convenience stores that is ready to eat, and pizza slices from a movie theater; hot buffet food, hot soup at a soup bar, and food from a salad bar; foods ordered from a menu or menu board at a grocery store intended for individual consumption (e.g., soups, sandwiches, and salads); and self-service foods and foods on display that are intended for individual consumption (e.g., sandwiches, wraps, and paninis at a deli counter; and cookies from a mall cookie counter; bagels, donuts, and rolls offered for individual sale).

II.A.6. What foods would not be considered "restaurant-type food"?

Foods that are grocery-type items that may be ready for immediate consumption but that consumers usually store for use at a later time or customarily further prepare would not be considered "restaurant-type food." Examples of food that generally would not be considered restaurant-type food include: food bought from bulk binds or cases (e.g., dried fruit, nuts) in grocery stores; foods to be eaten over several eating occasions or stored for later use (e.g., loaves of bread, bags or boxes of dinner rolls, whole cakes, and bags or boxes of candy or cookies); foods sold by weight that are not self-serve and are not intended solely for individual consumption (e.g., deli salads sold by unit of weight such as potato salad or chicken salad), either prepacked or packed upon consumer request; and foods that are usually further prepared before consuming (e.g., deli meats and cheeses).

Members of the Ready-to-Eat Task Group			
Co-Chair	David Sefcik	NIST, OWM	
Co-Chair	Lisa Warfield	NIST, OWM	
Public Sector Member	Stephen Benjamin	North Carolina	SWMA
Public Sector Member	Charles Carroll	Massachusetts	NEWMA
Public Sector Member	Fran Elson-Houston	Ohio	CWMA
Public Sector Member	Kurt Floren	Los Angeles County, California	WWMA
Public Sector Member	Roger Frazier	Arkansas	SWMA
Public Sector Member	Jason Glass	Kentucky	SWMA
Public Sector Member	Brett Gurney	Utah	WWMA
Public Sector Member	Milton Hargrave	Virginia	SWMA
Public Sector Member	Ryanne Hartman	Michigan	CWMA
Public Sector Member	Lori Jacobsen	South Dakota	CWMA
Public Sector Member	Hal Prince	Florida	SWMA
Public Sector Member	Louis Sakin	Towns of Hopkinton/Northbridge, Massachusetts	NEWMA
Public Sector Member	Ken Tichota	Nebraska	CWMA

Members of the Ready-to-Eat Task Group			
Public Sector Member	Philip Wright	Texas	SWMA
Private Sector Member	Dave Davis	Utah Food Industry Association	
Private Sector Member	Linda Doherty	New Jersey Food Council	
Private Sector Member	Eric Hardin	The Fresh Market, Inc.	
Private Sector Member	Doug Myers	Wal-Mart Stores, Inc.	
Private Sector Member	Vincent Orr	Whole Foods Market	
Private Sector Member	Audrey Patterson	King Williams and Gleason LLP	
Private Sector Member	Michael Roberson	Publix Super Markets, Inc.	
Private Sector Member	Kevin Schneider	Giant Food	
Private Sector Member	Elizabeth Tansing	Food Marketing Institute	

Regional Association Reporting:

Western Weights and Measures Association

At the 2022 WWMA Annual Meeting, Mr. Floren (Los Angeles County, California) felt this was a misguided proposal. He believes that the existing wording of 'if prepackaged' already addresses the issue. Mr. David Sefcik (NIST OWM), described that in a 2017 Ready-to-East Task Group, 14 regulators and seven industry members worked out this regulation in the first place, and that adding the word 'single serving' would make the regulations too onerous. This item is supposed to allow grocery store prepared food similar to what you would buy at a restaurant to be under the same regulations as a restaurant. By adding the word 'single' serving it would require weight statements on items such as large pizzas or buckets of chicken wings, which were meant to be excluded. As the WWMA L&R Committee heard no comments in support of this item, we recommended the item be withdrawn.

Central Weights and Measures Association

At the 2022 CWMA Interim Meeting, Mr. Loren Minnich (Kansas) commented this item has been considered in the past and believes it is a difficult subject for model language and enforcement purposes. He believes this item focuses on equity between places that prepare food for families such as a grocery store compared to a retail restaurant. He opposes the item because with the proposed language addition, the item only covers single serving. Mr. Ivan Hankins (Iowa) does not oppose it being a change to cover a single serving. However, he does not support the word "may" and believes the item needs to be further developed. Mr. Minnich further questioned how to identify the term "single serving". Hearing both objections and support for the item, and reviewing the proposed change, the Committee concurs this item is fully developed and is ready for Voting status.

Southern Weights and Measures Association

At the 2022 SWMA Annual Meeting, the Committee heard various comments in favor and against this item. Ms. Lisa Warfield (NIST OWM) recommended that this item be withdrawn since it had been previously and extensively vetted by the Ready-to-Eat TG. Mr. Hal Prince (Florida) also recommended that this item be withdrawn but did concede that there will always be a gray area and doesn't know if there is a better way – possibly reconvene a TG.

Mr. Tim Chesser (Arkansas) commented that he could see the confusion of how "Ready to Eat" food is currently defined (and interpreted). While he feels that this is a jurisdictional issue, he would like this item to be considered.

Mr. Robert Huff (Delaware), who submitted the item, clarified the intent of the addition of "single" which was to allow the consumer to make a value comparison.

While the Committee agreed that value comparison is important, adding the word "single" would not solve this issue since the quantity of a single serving or portion varies among businesses. In addition, the Committee recognized that the intent of the submission has merit, the language as proposed would not solve the presented issue and in turn would cause more confusion and other unintended consequences (i.e., excluding whole chicken, pizza, and ribs). The Committee recommended that this item be Withdrawn.

Northeastern Weights and Measures Association

At the 2022 NEWMA Interim Meeting, Ms. Warfield commented that there were typos in the title and the slash should be a dot as such: Section 1.12. Ready-to-Eat Food, **1/.**12.2. Methods of Sale. OWM does not believe this item has merit and believes it should be withdrawn. In 2016, a Ready to Eat Task Group was chaired by OWM and was comprised of 14 regulatory officials and seven industry (including Walmart, Whole foods, Publix, Giant) and trade association representatives (Food Marketing Inst. And NJ Food Council). The method of sale and definition of "ready-to-eat" was significantly vetted prior to its last modification in 2018. Ms. Warfield further stated that the definition of "ready-to-eat" only applies to restaurant food. Adding the word "single" eliminates such items as chicken and pizza. Mr. Jimmy Cassidy (Massachusetts); Mr. Steve Timar (New York); and Mr. John McGuire (New Jersey) all supported the item be withdrawn. Chair Sakin agreed. The Committee recommended the item be withdrawn from the agenda.

MOS-20.5 Section 2.21. Liquefied Petroleum Gas

Source: Arizona Department of Agriculture, Weights and Measures Services Division

Submitter's Purpose and Justification:

Provide clarity and consistency regarding the method of sale (MOS) for liquefied petroleum gas (LPG) through a meter that has a maximum rated capacity of 20 gal/min or less.

There appears to be a lack of clarity and consistency regarding the method of sale (MOS) for liquefied petroleum gas (LPG) through a meter that has a maximum rated capacity of 20 gal/min or less. The Uniform Regulation for the Method of Sale of Commodities, Section 2.2. Liquified Petroleum Gas specifically exempts these meters from the use of automatic temperature compensation but defines a gallon as 231 in^3 at 60 °F (15.6 °C). With this definition, it can be interpreted that, while automatic temperature compensation is not required, the sale of LPG shall be temperature compensated through manual means (or alternatively sold by weight). Temperature compensation manually requires the use temperature readings and a chart to manually perform conversions to determine the volume sold.

When discussing potential implementation of these requirements, propane industry officials in Arizona noted that other states do not require sale of LPG through these smaller meters to be temperature compensated or sold by weight and cited numerous problems with manual calibration or changing the MOS to sell by weight. An informal survey of western states appears to support that most do not enforce this requirement to sell LPG through these smaller meters by weight or temperature compensated.

Due to the inconsistency with the method of sale between various states and interpretation of this section, it is being proposed to exempt the sale of LPG through these smaller meters from temperature compensation. The item is proposed developing to allow for discussion and submittal of supporting cost analysis and impact to consumers and businesses that supports a requirement to sell LPG through these small meters as temperature compensated (or by weight).

The submitter noted that the sale of propane that is not temperature compensated can vary in quantities dispensed, which may provide a business or consumer with more or less product than stated.

OWM Executive Summary for MOS-20.5 – Section 2.21. Liquefied Petroleum Gas

OWM Recommendation: OWM recommends this as a Voting Item.

- OWM recognizes that this proposal did not garner enough votes at the 2021 and 2022 NCWM Annual Meetings and was returned to the Committee.
- As the Committee considers the next steps for this item, OWM would ask that the Committee consider the new format (layout) as shown under the OWM Detailed Analysis of the existing language. This will provide clarity and is easier to read. If this item is not adopted, OWM does considers a format change to the existing language to be considered editorial and would move forth to apply the format to the next edition of HB130.
- OWM recommends that the Committee consider delaying the effective date in Section 2.21.2.(b).

Table 3. Summary of Recommendations

MOS-20.5. – Section 2.21. Liquefied Petroleum Gas

	V	D	W	A	I	Notes*	Comments
Submitter							
OWM	✓						
CWMA	✓						
WWMA	✓						
SWMA	✓					1	
NEWMA	✓						
NCWM							

***Notes Key:**
1 – Submitted modified language
2 – Item not discussed
3 – No meeting held
4 – Not submitted on agenda
5 – No recommendation or not considered

Item Under Consideration:

2.21. Liquefied Petroleum Gas.

2.21.1. Method of Sale. – All liquefied petroleum gas, including, but not limited to propane, butane, and mixtures thereof, shall be kept, offered, exposed for sale, or sold by the **following methods of sale. If kept, offered, exposed for sale, or sold by:**

(a) **Weight**: by the **kilogram** or pound; or by,

(b) **Gaseous Volume: by the metered cubic meter of vapor (defined as 1 m^3 at 15 °C);** or metered cubic foot of vapor (defined as 1 ft^3 at 60 °F) [see ***Section 2.21. Note***]; or by,

(c) **Liquid Volume**: **by the liter (defined as 1 liter at 15 °C) or** the gallon (defined as 231 in^3 at 60 °F). ~~**All metered sales by the or gallon, except those using meters with a maximum rated capacity of (20 gal)/min or less, shall be accomplished by use of a meter and device that automatically compensates for temperature**~~.

2.21.2. Metered Sales by Liquid Volume. – All metered sales by liquid volume shall be accomplished using metering systems as follows:

(a) **Sales using metering systems with a maximum rated capacity greater than 20 gal/min shall be accomplished using a metering system that automatically compensates for the effects of temperature.**

(b) **Sales using metering systems with a maximum rated capacity equal to or less than 20 gal/min that were placed into service after January 1, 2026 shall be accomplished by use of a metering system that automatically compensates for the effects of temperature.**

(c) **Effective January 1, 2030, all metered sales (through all capacities of metering devices, regardless of installation and service date) shall be accomplished by use of a metering system that automatically compensates for temperature.**

Section 2.21. NOTE*: Sources: ~~American National Standards Institute, Inc.,~~ ANSI B109.1 (~~2008~~2000), "~~American National Standard~~ For Diaphragm-Type Gas Displacement Meters (~~14.16 Cubic Meters [~~Under 500 Cubic Feet~~]~~ Per Hour Capacity ~~and Under~~)," and NIST Handbook 44, "Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices."*

(Added 1986) **(Amended 20XX)**

NIST OWM Detailed Technical Analysis:

The requirement for selling LPG based on a 60 °F gallon is already stated in this regulation and applies to all sales. The current language in the regulation is vaguely written and has resulted in conflicting interpretations. Some officials read the requirement that automatic temperature compensation be provided on metering systems delivering more than 20 gal/min as also exempting sales of LPG in other applications from being sold and delivered using automatic temperature compensation. Other officials interpret the current language as meaning temperature compensation is required for all LPG sales using metering systems.

OWM recognizes that this proposal did not garner enough votes at the 2021 NCWM Annual Meeting and

was returned to the Committee. OWM believes this proposal is fully developed and consideration should be given to delaying the effective date.

If the Committee does not move the Item forward for consideration, OWM would ask that they consider the new format (layout) as shown in the Item under Consideration. This will provide clarity and is easier to read. OWM would consider a format change as editorial.

Summary of Discussions and Actions:

At the 2020 NCWM Interim Meeting, Mr. Tim Chesser (Arkansas) felt that the current proposal conflicts with language in NIST Handbook 44. Mrs. Tina Butcher (NIST OWM) responded the current language in Handbook 44 does not conflict with the language in this item, referencing language from NIST Handbook 44 stating "If a device is equipped with an automatic temperature compensator." This suggests that language in NIST Handbook 44 does not require modification to accommodate devices with automatic temperature compensation capabilities. Mr. Constantine Cotsoradis (Flint Hill Resources) questioned if this proposal would have any benefit for consumers. Representing the submitter, Mr. Vince Wolpert (Arizona) stated that temperature in the state ranges from 32 °F to 100 °F and volume delivered for LP sales varies accordingly. As a result of the lack of consistency with volume delivered, the state receives a lot of complaints concerning LP sales. Several regulators commented that the most equitable way to address the issue is to require automatic temperature compensation for all sales. The original submitter received feedback from the fall regions and modified the language (dated January 24, 2020). The submitter, Ms. Wilson, recommended this modified language be vetted through the regional meetings and industry for consideration. Currently, the Committee concurs with the recommendation and moved this item forward as the Item Under Consideration as Informational.

On the 2020 NCWM Interim Agenda the Item Under Consideration appeared as:

> **2.21. Liquefied Petroleum Gas.** – All liquefied petroleum gas, including, but not limited to propane, butane, and mixtures thereof, shall be kept, offered, exposed for sale, or sold by the pound, metered cubic foot [***NOTE 7***, page 132] of vapor (defined as 1 ft3 at 60 °F [15.6 °C]), or the gallon (defined as 231 in^3 at 60 °F [15.6 °C]). All metered sales by the gallon, except those using meters with a maximum rated capacity of 20 gal/min or less, shall be accomplished by use of a meter and device that automatically compensates for temperature. **Metered sales using a meter with a maximum rated capacity of 20 gal/min or less is exempt from temperature compensation requirements.**
>
> (Added 1986) (**Amended 20XX)**

At the 2021 NCWM Interim Meeting, the language within NCWM Publication 15 appeared as:

> **2.21. Liquefied Petroleum Gas.** – All liquefied petroleum gas, including, but not limited to propane, butane, and mixtures thereof, shall be kept, offered, exposed for sale, or sold by the pound, metered cubic foot [***NOTE 7***, page 132] of vapor (defined as 1 ft^3 at 60 °F [15.6 °C]), or the gallon (defined as 231 in^3 at 60 °F [15.6 °C]). ~~**All metered sales by the gallon, except those using meters with a maximum rated capacity of 20 gal/min or less, shall be accomplished by use of a meter and device that automatically compensates for temperature.**~~
>
> **(a) All metered sales by the gallon using a meter with a maximum rated capacity greater than 20 gal/min, shall be accomplished using a meter and device that automatically compensates for temperature.**

(b) For equipment placed in service on or after January 1, 2023, all metered sales using a meter with a maximum rated capacity of 20 gal/min or less shall be accomplished by use of a meter and device that automatically compensates for temperature.

(c) Effective January 1, 2030, all metered sales shall be accomplished by use of a meter and device that automatically compensates for temperature.

(Added 1986) (**Amended 20XX)**

Mr. Chesser commented his concern with conflicts between the method of sale and NIST Handbook 44 requirements. Mrs. Butcher addressed questions that were stated within the reporting for this item. Mrs. Butcher also provided an in-depth background and discussion on this item. It was noted that NIST OWM submitted modified language that was posted under the NCWM L&R supporting documents.

Some of the bullet points that were in the NIST analysis of this item were:

- The existing language references a value of "15.6 °C" for temperature determinations in metric units, according to the current industry practice for sales of petroleum products, the reference temperature for sales in metric are based on 15 °C rather than the exact conversion from 60 °F (which is 15.6 °C). Thus, the temperature reference in metric should be 15 °C.

- The current method of sale for LPG requires sales based on a specified reference temperature because of the significant effects of temperature on the volume of LPG. This helps ensure equity for buyer and seller; facilitate value comparisons among competing applications; and deter those who would take advantage of the effects of temperature on volume from using these effects to their advantage during sales under given temperature conditions.

- There is some concern that including effective dates as shown in the Item Under Consideration does have the effect of rescinding the original requirement for certain categories of sales. Additionally, specifying such dates may possibly lead to future extensions of these date or permanent exceptions. However, if this proposal will allow the community to progress toward more uniform implementation of temperature compensation in the commercial measurement of LPG, this approach may prove to be a valuable tool for accomplishing this goal and improve understanding and consistent application of the requirements, and we believe the submitter is to be commended for striving to achieve this clarity and uniformity in application.

- The second clause of the current Item Under Consideration addresses equipment put into service as of January 1, 2023. The generic reference to "equipment placed into service" implies that only newly installed equipment with flow rates of 20 gpm or less needs to include automatic temperature compensation capabilities. This could be misconstrued as negating the first clause in the proposal. We believe the intent of the submitter was to simply expand the requirement for "automatic" temperature compensation capability for metering systems above 20 gpm to include those systems below this flow rate point. Thus, a recommended alternative is included in the suggested changes.

Formatting Changes:

- By formatting the language into sub-sections, it makes the method of sale requirement easier to follow and apply and facilitates consideration of the Item Under Consideration.

Mr. Scott Simmons (Colorado) led a discussion regarding some of the issues that his state has faced regarding LPG sales. Mr. Simmons and many other regulators expressed support for this Item. It was

expressed that many were unaware of the NIST modified proposal. NCWM L&R Chair McGuire encouraged membership to review the NIST proposal. During the Committee work session both the original and NIST proposals were discussed. A Committee member expressed concern that industry may be unaware of this agenda item. Several Committee members commented that they would reach out to their industry contacts to alert them. The Committee heard many comments that they supported the NIST proposal. The Committee was appreciative that NIST had reformatted the structure to make the language easier to read and recommends this move forward as a Voting Item.

At the 2021 NCWM Annual Meeting, Mr. Swiecicki (NPGA) expressed concern with the language for temperature compensation and how the mechanical devices have a lag in correcting the temperature. Mr. Swiecicki did request that the date in Section 2.21.2.(b) be moved to 2025, or at least another year added. Mr. Schnepp (California) remarked that in Section 2.21.2.(a) the language should read "equal to or greater than" to align with NIST HB44 language. Mr. Allen (Arizona) was supportive of the changes from Mr. Schnepp. Mr. Willis (New York) rose to oppose this item and believes this item is detrimental to the propone industry. Mr. Willis remarked that they are done by weight and the temperature compensation is an issue with the smaller tanks. Mr. Ramsburg (Maryland) asked the Committee to withdraw the item.

Based on testimony during open hearings and reviewing the documents from the regional meetings, the Committee changed the effective date in Section 2.21.2.(b) from January 1, 2023, until January 1, 2024. In Sections 2.21.2. (a), (b) and (c) replaced the words "meter and device" with "metering system." The Committee concurred with Mr. Schnepp's recommendation to modify the language in Section 2.21.2.(a) to replace the words "greater than or equal to" with "equal to or greater than". This item did appear as a Voting Item at the 2021 NCWM Annual Meeting but did not garner enough votes, it was therefore returned to the Committee.

At the 2022 NCWM Interim Meeting, there were several regulators that spoke in favor of moving the item forward as Voting. NGA also supported this change with a modify effective date. A regulator opposed the item stating that the small variance in gross and net quantities makes it unnecessary. This was challenged by another regulator who stated that the variances due to temperature variations in his state made it necessary. Another regulator suggested requiring an interlock mechanism.

The Committee assigned Voting status for this item at the 2022 Interim Meeting and extended the effective dates to address concerns expressed during the open hearings.

At the 2022 NCWM Annual Meeting, NCWM 2022 Annual Meeting: Mr. Floren (Los Angeles County, California) commented that Section 2.21.1.(c) should read "Liquid Volume". The Committee concurred with the modification. There was no discussion on the item during the voting and it failed to receive the necessary votes to pass and was returned to Committee.

This is the second time this item has been presented for a vote before membership and returned to the Committee. Membership is split between whether there is a need for a temperature compensator on meters of 20 gallons or less. The Committee believes this item is fully developed and no addition work is needed.

Regional Association Reporting:

Western Weights and Measures Association

At the 2021 WWMA Annual Meeting, Mr. Bruce Swiecicki (NPGA) provided testimony that highlighted concerns from the background information in the agenda. He commented that with meters dispensing at less than 20 gallons per minute, automatic temperature compensation would have a minimal effect on small

deliveries. Mr. Swiecicki also commented on the financial burden that would be placed on industry to convert to automatic temperature compensation. Mr. Matt Douglas (CDFA-DMS) provided testimony that they support the item and there is redundant language that requires editing.

The Committee recommends this as a Voting Item with the following editorial changes and a change in effective date from January 1, 2024, to January 1, 2025:

2.21. Liquefied Petroleum Gas.

2.21.1. Method of Sale. – All liquefied petroleum gas, including, but not limited to propane, butane, and mixtures thereof, shall be kept, offered, exposed for sale, or sold ~~**by**~~ **in accordance with** the **following methods of sale and conditions.** ~~**If kept, offered, exposed for sale, or sold by:**~~

(a) Weight: by the **kilogram** or pound~~; or by,~~

(b) Gaseous Volume: by the metered cubic meter of vapor (defined as 1 m^3 at 15 °C); or metered cubic foot of vapor (defined as 1 ft^3 at 60 °F) [See *Section 2.21. Note*]; ~~or by,~~

(c) Liquid Volume: **by the liter (defined as 1 liter at 15 °C) or** the gallon (defined as 231 in^3 at 60 °F). ~~**All metered sales by the or gallon, except those using meters with a maximum rated capacity of (20 gal)/min or less, shall be accomplished by use of a meter and device that automatically compensates for temperature**~~.

2.21.2. Metered Sales by Liquid Volume. – All metered sales by liquid volume shall be accomplished using metering systems as follows:

(a) Sales using metering systems with a maximum rated capacity equal to or greater than 20 gal/min shall be accomplished by the use of a metering system that automatically compensates for temperature.

(b) Sales using metering systems with a maximum rated capacity less than 20 gal/min that were placed into service after January 1, 2025 shall be accomplished by use of a metering system that automatically compensates for the effects of temperature.

(c) Effective January 1, 2030, all metered sales (through all capacities of metering devices, regardless of installation and service date) shall be accomplished by use of a metering system that automatically compensates for temperature.

Section 2.21. NOTE*: Sources:* ~~***American National Standards Institute, Inc.,***~~ *ANSI B109.1 (****2008****2000****), "****American National Standard*** *For Diaphragm-Type Gas Displacement Meters (****14.16 Cubic Meters [****Under*** *500 Cubic Feet****]*** *Per Hour Capacity* ~~***and Under***~~*),"* and NIST Handbook 44, *"Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices."*

(Added 1986**) (Amended 20XX**)

WWMA L&R Committee believes this item is fully developed; the Committee has the following concerns:

- The potential lack of effectiveness of automatic temperature compensation on short deliveries.
- The financial burden on device operators that would be affected by the proposed changes.

- Would like to hear reasons for lack of supporting votes.

At the 2022 WWMA Annual Meeting, Mr. Scott Simmons (Colorado) believes that the method of sale needs to be fixed, apply the standards we already have in a consistent manner. Mr. Kevin Schnepp, (CDFA/DMS) supports this item moving forward. The WWMA L&R Committee recommends Voting status based on the comments heard.

Central Weights and Measures Association

At the 2021 CWMA Interim Meeting, Mr. Ivan Hankins (Iowa) commented that the WWMA and SWMA are recommending this item to be a Voting Item which allows for temperature compensation on 20 or less gpm meters. Mr. Charlie Stutesman (Kansas) commented that he believes the 2025 date is a more appropriate date for new meters rather than 2024, and all other devices be switched by 2030. He further commented that he supports getting compensators on the meters, particularly at retail sites where staff may not be properly trained on how to figure the compensated volume. The Committee believes that if this item is passed in 2022, the proposed 2024 date is a sufficient time to implement changes for new meters. The Committee believes this item is fully vetted and ready for Voting status.

At the 2022 CWMA Annual Meeting, Ms. Lisa Warfield (NIST OWM) commented that a typical packaging change is adopted with a three-year lead time from the date of adoption. The Committee believes this item is fully developed and should remain as a Voting status item and recommends the three-year implementation suggestion.

At the 2022 CWMA Interim Meeting, Mr. Loren Minnich (Kansas) commented he has no opinion on the content of the item, but the formatting of the proposal should be bolded and underlined after Section 2.21 (see below). Mr. Hankins expressed support for putting temperature compensators on any LPG meter with a maximum rated capacity of 20 gal/min or less. He believes six years as indicated in Section 2.21.2.(c) is too long of an implementation time. Mr. Doug Rathbun (Illinois) concurs with Mr. Hankins. After discussion, the Committee agreed with Mr. Minnich's formatting suggestion and concurred the item is fully developed and ready for Voting status.

2.21. Liquefied Petroleum Gas

2.21.1. Method of Sale. – All liquefied petroleum gas, including, but not limited to propane, butane, and mixtures thereof, shall be kept, offered, exposed for sale, or sold by **the following methods of sale: ~~If kept, offered, exposed for sale, or sold by:~~**

(a) Weight: by the kilogram or ~~the~~ pound**; or by,**

(b) Gaseous Volume: by the metered cubic meter of vapor (defined as 1 m^3 at 15 °C); or metered cubic foot **[**~~See *Section 2.21. Note*~~**]** of vapor (defined as 1 ft^3 at 60 °F **[**~~15.6 °C~~**]**) **[**See *Section 2.21. Note*~~]~~**;** or **by,**

(c) Liquid Volume: by the liter (defined as 1 liter at 15 °C) or the gallon (defined as 231 in^3 at 60 °F)**.**

2.21.2. Metered Sales by Liquid Volume. – All metered sales by liquid volume shall be accomplished using metering systems as follows:

(a) ~~**All metered**~~ **S**ales ~~**by the gallon, except those**~~ using ~~**meters**~~ **metering systems with a** maximum rated capacity greater than 20 gal/min ~~**or less**~~ shall be accomplished **use of a** ~~**meter**~~

~~**and device**~~ **using a metering system that** automatically compensates for **the effects of** temperature**.**

(b) Sales using metering systems with a maximum rated capacity equal to or less than 20 gal/min that were placed into service after January 1, 2026, shall be accomplished by use of a metering system that automatically compensates for the effects of temperature.

(c) Effective January 1, 2030, all metered sales (through all capacities of metering devices, regardless of installation and service date) shall be accomplished by use of a metering system that automatically compensates for temperature.

Section 2.21. NOTE: *Sources:* ~~***American National Standards Institute, Inc.,***~~ *ANSI B109.1 (*~~***2008***~~***2000***), *"*~~***American National Standard***~~ *For Diaphragm-Type Gas Displacement Meters (*~~***14.16 Cubic Meters [***~~***Under** 500 Cubic Feet*~~***]***~~ *Per Hour Capacity* ~~***and Under***~~*)," and NIST Handbook 44, "Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices."*

(Added 1986) **(Amended 20XX)**

Southern Weights and Measures Association

At the 2021 SWMA Annual Meeting, NIST OWM provided a written analysis that this proposal is fully developed, and consideration should be given to delaying the effective date until January 1, 2025. Mr. Tim Chesser (Arkansas) spoke in support of this item if the language is amended to an effective date of January 1, 2025. The Committee believes this is fully developed and recommends this as a Voting Item with an effective date of January 1, 2025.

At the 2022 SWMA Annual Meeting, Ms. Lisa Warfield (NIST OWM) stated that this item has not garnered enough votes to get through the conference twice, but NIST has reformatted for clarity. Respectfully, NIST requests that the new format moves forward while also soliciting commentary to understand why the modified language stalled.

Mr. Ken Ramsburg (Maryland) had inquired if Section 2.21.1.(b) should be moved somewhere else in the handbook.

This is a carryover item returned to the National L&R Committee from the voting session in the NCWM Annual Meeting. The Committee did not receive comments in favor or against it during the open hearings. The Committee believes the item is fully developed and recommends moving forward as a Voting Item with the following editorial changes to Section 2.21.1. Method of Sale.

2.21.1. Method of Sale. – All liquefied petroleum gas, including, but not limited to propane, butane, and mixtures thereof, shall be kept, offered, exposed for sale, or sold by the **following methods of sale.** ~~**If kept, offered, exposed for sale, or sold by:**~~

Northeastern Weights and Measures Association

At the 2021 NEWMA Interim Meeting, Mr. Jim Willis (New York) commented that he spoke to the submitter regarding the equivalency comparison to the gallon. Mr. Willis does not support this change. Mr. McGuire commented that those opposed to the item should indicate alternative options to verify volume. Mr. McGuire believes the item is ready for Voting status and believes that all metered sales by liquid volume should be sold by temperature compensation. Mr. Bruce Sweicicki (NPG) agreed that this item is unnecessary, and the meters being used to determine volume are mechanical in nature and not precise

enough for grill containers. Mrs. Tina Butcher (NIST OWM) commented the method of sale statement does not exclude automatic temperature compensation and it is simply in the second or alternative method of sale that appears after the original method of sale statement. L&R Chair Sakin commented that this item should have explicit clarity to avoid unintended consequences for small cylinders under 20 pounds. The Committee concurs that this be recommended as a Developing Item.

At the NEWMA 2022 Annual Meeting, Mr. Willis stated that New York has continued to voice his opposition for this item due to it is burdensome for regulators and industry NEWMA recommends this item move forward as a Voting Item.

At the 2022 NEWMA Interim Meeting, Ms. Warfield commented that if this language does not move forward, would the Committee consider the new format that provides clarity and is easier to read. If the item moves forward, OWM recommends that the Committee consider delaying the effective date in Section 2.21.2.(b). Mr. John McGuire (New Jersey) supports this item and believes the item is fully developed and ready for Voting status. Mr. Walt Remmert (Pennsylvania) concurs as does Mr. Jimmy Cassidy (Massachusetts). Mr. Jim Willis (New York) does not support this item due to statues within New York. The Committee believes this item is fully developed and ready for Voting status.

MOS-23.4 Retail Sales of Electricity Sold as a Vehicle Fuel

Source: NIST Office of Weights and Measures

Submitter's Purpose and Justification:

Align the unit of measurement recognized for electrical energy vehicle fueling equipment in corresponding legal metrology requirements in NIST Handbook 44 Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices Section 3.40 Electric Vehicle Fueling Systems Code, NIST Handbook 130 Uniform Laws and Regulations in the Areas of Legal Metrology and Fuel Quality Part IV. B. Section 2.34 Retail Sales of Electricity Sold as a Vehicle Fuel, and corresponding international documentary standards.

In harmony with the USNWG's EVFE Subgroup 2022 recommendation deleting all references to the "megajoule" unit of measurement in the device handbook requirements, NIST OWM proposes similar modifications to the method of sale regulation for retail sales of electrical energy as a vehicle fuel. The joule unit of measurement is not in use for this commercial application. This proposal will align the unit of measurement recognized for electrical energy vehicle fueling equipment in corresponding legal metrology requirements in NIST Handbook 44 Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices, Section 3.40 Electric Vehicle Fueling Systems Code, NIST Handbook 130 Uniform Laws and Regulations in the Areas of Legal Metrology and Fuel Quality Part IV. B. Section 2.34 Retail Sales of Electricity Sold as a Vehicle Fuel, and corresponding international documentary standards.

The 2022 NCWM adopted several initial modifications in the device handbook code requirements for Electric Vehicle Fueling Systems (EVSEs) to include removing the megajoule (MJ) SI unit. This modification was made in response to information received from the USNWG's EVFE Subgroup indicating this unit of measurement is not recognized for electrical energy in the SI system (i.e., OIML R 46 *Active electrical energy meters* and the yet to be published OIML electrical vehicle charging systems standard). During the 2023 weights and measures standards development cycle further modifications will be proposed by the EVFE Subgroup to remove all remaining references to the megajoule in the device requirements. To align the unit of measurements recognized for electrical energy vehicle fueling in corresponding legal metrology requirements in NIST Handbook 44 and NIST Handbook 130 NIST OWM has developed this

proposal for modifying NIST Handbook 130 method of sale, equipment labeling, signage, and advertising requirements to delete all reference to the megajoule (MJ).

The submitter acknowledges that removing the "megajoule (MJ)" unit of measurement from the handbook does not conform to the practice in place for applying the concept of primary use of SI (metric) measurements recommended in the Omnibus Trade and Competitiveness Act of 1988.

Following this practice, the handbooks cite the SI unit before the U.S. customary unit of measurement. Currently, the handbook code requirements which apply to measurements of electrical energy when sold as a vehicle fuel the requirement specify the megajoule followed by the kilowatt-hour (kWh). It appears the trade practice is limited to the kilowatt-hour. Consequently, it is recommended the megajoule no longer be referenced in all handbooks (130 and 44) for this commercial application and to harmonize with corresponding international standards where units of measurement are only expressed only in the kilowatt-hour.

The Joule does not appear to be in use as the unit for measuring the quantity of electrical energy supplied to an EV battery. Measurements of electrical energy will be in increments of 0.0001 kWh for AC systems and 0.001 kWh for DC fast charging systems. The conversion of a kilowatt-hour to a megajoule is accomplished by multiplying by a factor of 3.6 (i.e., 1 kWh = 3 600 000 J = 3 600 kJ = 3.6 MJ). Rather than advance indications of quantity in increments of 3.6 the code developers agreed to recognize an increment value for electrical energy when sold as a vehicle fuel expressed as 5 (or 5 MJ) in the handbooks, which is an increment that facilitates rounding and calculating delivery quantities and the total sale amount. The elimination of the use of the megajoule to require only indications in the kilowatt-hour unit of measurement does not appear to adversely affect any EVSEs in commercial use. Should the delivery, displayed quantity, and advertised price of electrical energy move to expressions of quantity by the joule the handbook could be modified to recognize that unit of measurement.

The submitter requested that this be a Voting Item in 2023.

OWM Executive Summary for MOS-23.4 – Retail Sales of Electricity Sold as a Vehicle Fuel

OWM Recommendation: OWM recommends this as a Voting Item.

- The Joule unit of measurement is not in use for this commercial application. This will align with the USNWG recommendation to delete all references in HB44 to the megajoule, as well as align HB130.
- The proposal aligns the unit of measurement recognized for electrical energy vehicle fueling equipment in corresponding legal metrology requirements in NIST Handbooks 44 and 130 by removing all reference to "joule."
- The proposal is in harmony with the USNWG's EVFE Subgroup 2022 recommendation deleting all references to the "megajoule" unit of measurement in the EVFS handbook requirements.
- The "joule" unit of measurement is not recognized for electrical energy in corresponding OIML R 46 *Active electrical energy meters* and the recently published OIML Guide 22 Electrical vehicle supply equipment standard.
- NIST OWM acknowledges that removing the "megajoule (MJ)" unit of measurement from the handbook does not conform to the practice in place for applying the concept of primary use of SI

OWM Executive Summary for MOS-23.4 – Retail Sales of Electricity Sold as a Vehicle Fuel

(metric) measurements. However, it appears that the trade practice is limited to use of the kilowatt-hour unit of measurement. Should the delivery, displayed quantity, and advertised price of electrical energy move to expressions of quantity by the joule the handbook could be modified at that time to recognize that unit of measurement.

Table 3. Summary of Recommendations

MOS-23.4. – Retail Sales of Electricity Sold as a Vehicle Fuel

	V	D	W	A	I	Notes*	Comments
Submitter -OWM	✓						
CWMA	✓						
WWMA	✓						
SWMA	✓						
NEWMA	✓						
NCWM							

***Notes Key:**
1. – Submitted modified language
2. – Item not discussed
3. – No meeting held
4. – Not submitted on agenda
5. – No recommendation or not considered

Item Under Consideration:

2.34. Retail Sales of Electricity Sold as a Vehicle Fuel.

…

2.34.2. Method of Sale. – All electrical energy kept, offered, or exposed for sale and sold at retail as a vehicle fuel shall be in units in terms of the ~~**megajoule (MJ) or**~~ kilowatt-hour (kWh). In addition to the fee assessed for the quantity of electrical energy sold, fees may be assessed for other services; such fees may be based on time measurement and/or a fixed fee.

(Amended 202X)

2.34.3. Retail Electric Vehicle Supply Equipment (EVSE) Labeling.

(a) A computing EVSE shall display the unit price in whole cents (e.g., $0.12) or tenths of one cent (e.g., $0.119) on the basis of price per ~~**megajoule (MJ) or**~~ kilowatt-hour (kWh). In cases where the electrical energy is unlimited or free of charge, this fact shall be clearly indicated in place of the unit price.

(Amended 202X)

…

2.34.4. Street Sign Prices and Other Advertisements. – Where electrical energy unit price information is presented on street signs or in advertising other than on EVSE:

(a) The electrical energy unit price shall be in terms of price per ~~**megajoule (MJ) or**~~ kilowatt-hour (kWh) in whole cents (e.g., $0.12) or tenths of one cent (e.g., $0.119). In cases where the electrical energy is unlimited or free of charge, this fact shall be clearly indicated in place of the unit price.

(Amended 20XX)

NIST OWM Detailed Technical Analysis:

The 2022 NCWM adopted several initial modifications in the device handbook code requirements for Electric Vehicle Fueling Systems (EVSEs) to include removing the megajoule (MJ) SI unit. This modification was made in response to information received from the USNWG's EVFE Subgroup indicating this unit of measurement is not recognized for electrical energy in the SI system (i.e., OIML R 46 *Active electrical energy meters* and the yet to be published OIML electrical vehicle charging systems standard). This proposal will align with the USNWG recommendation to delete all references in NIST Handbook 44 Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices Section 3.40 Electric Vehicle Fueling Systems Code to the megajoule. Additional information is outlined in the Submitter's Purpose and Justification section above.

Regional Association Reporting:

Western Weights and Measures Association

At the 2022 WWMA Annual Meeting, Ms. Cadence Matijevich (Nevada) spoke in support of this item. We heard testimony that this item would harmonize NIST Handbook 130 with NIST Handbook 44. Mr. Kevin Schnepp (CDFA/DMS) supported this item moving forward.

The WWMA L&R Committee recommends Voting status based on the comments heard.

Central Weights and Measures Association

At the 2022 CWMA Interim Meeting, Mr. Craig VanBuren (Michigan) indicated support for this item. He believes it is ready for Voting status as it reflects changes suggested in subsequent meetings. Mr. Mike Harrington (Iowa) also supports this item both in concept and as an item with Voting status. Based on supportive testimony for this item and the desire to move it forward as a Voting Item, the Committee believes it is fully developed and ready for Voting status.

Southern Weights and Measures Association

At the 2022 SWMA Annual Meeting, Ms. Lisa Warfield (NIST OWM) commented that the megajoule (MJ) is not for use in the application and recommends aligning with the National workforce group to remove all megajoule references. No other comments were received. The Committees believed that this item is fully developed and recommends it as a Voting Item.

Northeastern Weights and Measures Association

At the 2022 NEWMA Interim Meeting, Ms. Warfield commented the item number should be MOS-23.4. Ms. Juana Williams (NIST OWM) commented that this is a companion item to an S&T item where megajoule is being removed as a measurement term. Mr. John McGuire (New Jersey) supports the item moving forward as a Voting Item, as does Mr. Jimmy Cassidy (Massachusetts), and Mr. Jim Willis (New York). The Committee recommends this item move forward with Voting status.

UPR – Uniform Unit Pricing Regulation

UPR-23.1 Section 2. Terms for Unit Pricing.

Source: Vermont Division of Food Safety & Consumer Protection Weights and Measures

Submitter's Purpose and Justification:

Make the Uniform Unit Pricing Regulation in Handbook 130 more comprehensive by adding terms for commodities sold by length.

Unit Pricing allows consumers to make value comparisons of similar products and assists those consumers with making purchasing decisions. Currently the Uniform Unit Pricing Regulation offers guidance for commodities sold by weight, dry measure or volume, liquid volume, count, and area. It does not include guidance for commodities sold by length.

The current period of inflation has led to frequent price and package size changes. This is resulting in unit pricing becoming more critical to consumers who are trying to maximize their purchasing power. Without clear guidance many of these commodities are being sold by the each or with inconsistent units. This does not allow consumers to make value comparisons of similar products.

Adding the proposed language will add clear guidance to the regulation and assist retailers with providing accurate unit pricing information to consumers. The guidance will also benefit retailers who are either required to or voluntarily choose to unit price their commodities by providing specific information to items sold by length. The proposed language is clear and consistent with the other units of measure currently stated in the regulation.

The submitter acknowledges that due to added time and expense, some retailers may be opposed to unit pricing by length as it adds another category of commodity that is required be addressed. Some retailers may question the value of unit pricing and feel it is not used or underutilized by consumers.

The submitter requested that this be a Voting Item in 2023.

OWM Executive Summary for UPR-23.1 – Section 2. Terms for Unit Pricing.
OWM Recommendation: OWM supports the recommended proposal with a minor modification. • OWM supports the proposed change and recommends adding "per 100 feet" be added to the proposed language. The modified language would read, "Price per meter, decimeter, centimeter or price per yard, foot or 100 feet, or inch, if net quantity of contents of the commodity is in terms of length." • The Uniform Unit Pricing Regulation does not provide guidance for commodities sold by length.

OWM Executive Summary for UPR-23.1 – Section 2. Terms for Unit Pricing.
The terms recommended in the proposal have been in use in the marketplace for many years. Adding the proposed language will add clear guidance to the regulation and assist retailers with providing accurate and uniform unit pricing information to consumers. • Making this change would be consistent with NIST Special Publication 1181 Unit Pricing Guide, "A Best Practice Approach to Unit Pricing". • The title as stated in the report "**Uniform Unit Pricing Verification."** The accurate title is the **Uniform Unit Pricing Regulation.**

Table 3. Summary of Recommendations

UPR-23.1. – Section 2. Terms for Unit Pricing

	V	D	W	A	I	Note*	Comments
Submitter	✓						
OWM	✓						
CWMA	✓						
WWMA	✓					1	
SWMA	✓					1	
NEWMA	✓						
NCWM							

***Notes Key:**
1 – Submitted modified language
2 – Item not discussed
3 – No meeting held
4 – Not submitted on agenda
5 – No recommendation or not considered

Item Under Consideration:

Amend Handbook 130 Uniform Unit Pricing Regulation as follows:

Section 2. Terms for Unit Pricing

The declaration of the unit price of a particular commodity in all package sizes offered for sale in a retail establishment shall be uniformly and consistently expressed in terms of:

(a) Price per kilogram or 100 g, or price per pound or ounce, if the net quantity of contents of the commodity isin terms of weight.

(b) Price per liter or 100 mL, or price per dry quart or dry pint, if the net quantity of contents of the commodityis in terms of dry measure or volume.

(c) Price per liter or 100 mL, or price per gallon, quart, pint, or fluid ounce, if the net quantity of contents of the commodity is in terms of liquid volume.

(d) Price per individual unit or multiple units if the net quantity of contents of the commodity is in terms of count.

(e) Price per square meter, square decimeter, or square centimeter, or price per square yard, square foot, or square inch, if the net quantity of contents of the commodity is in terms of area.

(f) **Price per meter, decimeter, centimeter or price per yard, foot, or inch, if net quantity of contents of the commodity is in terms of length.**
(Amended 20XX)

NIST OWM Detailed Technical Analysis:

Presently, ten states adopt the Uniform Unit Pricing Regulation. Nine states have their own mandatory unit pricing regulations, leaving 31 states with no regulation in force. Unit Pricing allows consumers to make value comparisons of similar products and assists those consumers with making purchasing decisions.

Currently, the Uniform Unit Pricing Regulation does not provide guidance for commodities sold by length. The terms recommended in the proposal have been in use in the marketplace for years despite it being omitted from Section 2: Terms for Unit Pricing. Adding the proposed language will add clear guidance to the regulation and assist retailers with providing accurate and uniform unit pricing information to consumers.

OWM supports the proposed change, but also recommends that "per 100 feet" be added. The language proposed language should appear as

(f) Price per meter, decimeter, centimeter or price per yard, foot or 100 feet, or inch, if net quantity of contents of the commodity is in terms of length.

This would be consistent with NIST Special Publication 1181 "**Unit Pricing Guide, "A Best Practice Approach to Unit Pricing" | NIST**.

Regional Association Reporting:

Western Weights and Measures Association

At the 2022 WWMA Annual Meeting, Mrs. Catherine de Contreras (CDFA/DMS), Mr. Kurt Floren (Los Angeles County, California), and Mr. David Sefcik (NIST OWM), supported this item moving forward. Mr. Sefcik also brought up adding the term "100-foot," after the word foot in item (f) to harmonize language with the best practice guide publication NIST SP1181 Unit Pricing Guide.

(f) Price per meter, decimeter, centimeter or price per yard, foot, 100-foot, or inch, if net quantity of contents of the commodity is in terms of length.

The WWMA L&R Committee recommends Voting status with the above changes, based on the comments heard.

Central Weights and Measures Association

At the 2022 CWMA Interim Meeting, Mr. Doug Musick (Kansas) supported the item and believes it is ready for Voting status. The Committee concurs this item is fully developed and ready for Voting status.

Southern Weights and Measures Association

At the 2022 SWMA Annual Meeting, Ms. Lisa Warfield (NIST OWM) was in support of proposed changed and recommended adding "per 100 feet" ("Or 100 feet"). The recommended term has been in the marketplace and adding this into the handbook will align to NIST SP 811.

The Committee recommends this as a Voting Item with the addition of the term "100-foot," after the word foot in item (f) to harmonize language with the best practice guide publication NIST SP1181 Unit Pricing Guide.

(f) Price per meter, decimeter, centimeter or price per yard, foot, 100-foot, or inch, if net quantity of contents of the commodity is in terms of length.

Northeastern Weights and Measures Association

At the 2022 NEWMA Interim Meeting, Mr. Mark Paquette (Vermont and submitter) stated that the terms of length should be added to this model language for consistency in the marketplace. Ms. Lisa commented that OWM supported the proposed change and recommends adding "per 100 feet" be added to the proposed language. The modified language would read, "Price per meter, decimeter, centimeter or price per yard, foot or 100 feet, or inch, if net quantity of contents of the commodity is in terms of length." Ms. Warfield further commented that the Uniform Unit Pricing Regulation does not provide guidance for commodities sold by length. The terms recommended in the proposal have been in the marketplace but adding the proposed language will add clear guidance to the regulation and assist retailers with providing accurate unit pricing information to consumers. She also remarked that making this change would be consistent with NIST Special Publication 1181 Unit Pricing Guide, "A Best Practice Approach to Unit Pricing". Ms. Warfield noted that there is an editorial error in the title – it should read Uniform Unit Pricing Regulation. Mr. Jason Flint (New Jersey) commented that they support this item with Ms. Warfield's amendment and supports it as a Voting Item. Mr. Paquette has no objection to the amended language. Mr. Jimmy Cassidy, (Massachusetts), Ms. Cheryl Ayer (New Hampshire), and Mr. Walt Remmert (Pennsylvania), all support it as a Voting Item, as amended. The Committee recommends Voting status for this item as amended by Ms. Warfield.

NTP – Uniform Regulation for National Type Evaluation

NTP-23.1 Section 4. Prohibited Acts and Exemptions.

Source: Electrify America

Submitter's Purpose and Justification:

Provide provisions for devices in service prior to the expansion of NTEP evaluation of the device category.

NTEP does not accept applications for evaluations of all categories of devices that are covered by category-specific standards in Handbook 44. As just a few examples, NTEP does not evaluate timing devices, fabric-measuring devices, odometers, or milk meters. If a certificate of conformance were an

absolute requirement for the lawful use of a commercial device, the absence of these evaluation programs would present a serious problem, because no device in these categories would be permissible. The Uniform Regulation in Handbook 130 addresses that situation by stating that the Uniform Regulation applies to categories for which NTEP has established evaluation procedures.

But there remains a problem about categories for which NTEP has not previously established evaluation procedures, but then newly begins evaluations. This problem has surfaced recently for electric vehicle chargers. Before 2021, NTEP did not have an evaluation procedure for EV chargers, and it did not accept applications for evaluating them. In 2021, NTEP published an evaluation protocol for AC chargers, and on July 1, 2022, it issued its first certificate for an AC charger. As the Uniform Regulation is drafted, there is a significant risk for existing devices. The Uniform Regulation says a device must be traceable to an active certificate of conformance. Section 4(a), (b). By definition, a device is traceable to an active CC only if the device "was manufactured during the period that the Certificate was maintained in active status." Section 2.1. A device that was manufactured before NTEP was even inspecting a given category of device was not manufactured during a period withan active certificate. There are various exceptions in section 4 (such as one-of-a-kind devices, or the change that a statenewly adopts the Uniform Regulation), but none that works for an existing device in this situation.

Many states do not incorporate the Uniform Regulation by reference but have instead drafted their own rules that are basedon it. Most such states do not incorporate this narrow concept of "traceable," which produces such potential difficulties in cases where NTEP transitions by beginning to evaluate a given category of device. Most states that have drafted their own rules also provide a general-purpose exception, that a device without an NTEP certificate can still be used if the weights and measures director approves the device type. In 2021, Florida amended its regulations for exactly that sort of purpose. Previously, Florida absolutely required an NTEP certificate; now, a device without an NTEP certificate can be used in commercial service if the director has reviewed and approved the device under Handbook 44 standards.

We believe that approach was the original intent of the Uniform Regulation. In other words, NTEP was meant to provide assistance to state directors, by offering a standard nationwide evaluation they could rely on; but it was not meant to restrict the ability that state directors used to have, to conduct their own evaluations. The proposed amendment would clarify that authority, in states that incorporate the Uniform Regulation by reference. Under the amendment, a director would not be forced to accept or approve devices from before an NTEP transition. But the director would be able to approve them.

The proposal does not limit its scope to devices that were placed in service, installed, or manufactured before a given point, whether that point is the publication of an evaluation protocol, the opening of NTEP to application, the issuance of the first certificate in a given category, or the issuance of a certificate for a given type. The various options for such trigger dates would present unfairness, in various ways. For example, when NTEP has published an evaluation protocol, there will typically be an extended period of time during it which it does its first evaluations under the new protocol, before it actually issues certificates. It would not be sensible to make the "director approval" available only for devices from before the protocol was published, but not those during the intervening period while NTEP was getting used to the process in its first evaluations. Then, when NTEP does issue certificates, some device type will get the first one. That might be because that manufacturer was first in line, but there could be multiple other factors (scheduling at evaluation labs, the complexity of a given design, etc.). It would not seem right to cut off the "director approval" option for all other devices just because the first certificate has issued. Besides, the "director approval" option should not really be cut off at any point. This option should remain available, not only in NTEP transitions but indefinitely, so that a state director retains the discretion and flexibility to approve a device type. So that, as was originally intended, the NTEP program is a support and assistance to regulators, rather than a constraint on them.

A regulator should not, of course, approve a device type that is not capable of complying with applicable Handbook 44 standards. The proposal would require that an application for director approval be accompanied by documentation showing the device type does comply. The text is modeled on the regulatory amendment that Florida adopted in 2021 to establish a "director approval" mechanism.

This problem is arising today with respect to EV chargers, and solving it is a nationwide issue to avoid the potential replacement of chargers that are adequate and comply with Handbook 44 standards, simply because of a technical flaw in the Uniform Regulation. But the problem is likely to recur. EV chargers are not the last device category for which there will be an NTEP transition. The lack of a "director approval" exception in the Uniform Regulation is likely an oversight from the original drafting, and it should be corrected.

The submitter acknowledges that one potential objection would be that this proposal will increase the burden on regulators, because they will receive multiple applications for director approval. We believe that concern should not lead to rejection of the proposal. Many states already operate a "director approval" mechanism, and we are not aware of undue burden they face from applications. Moreover, a given agency would be able to decide how it wants to implement or exercise this exception. An agency might, for example, announce that "director approval" is only available in certain specified circumstances.

Another objection might be that "director approval" does not need to be written into the Uniform Regulation, becausedirectors have this authority anyway. That might be true in many states, but there are likely some states that adopt the Uniform Regulation by reference, and where state law does not give the director authority to issue variances.

The submitter requested that this be a Voting Item.

OWM Executive Summary for NTP-23.1 Section 4. Prohibited Acts and Exemptions

OWM Recommendation:

- Recommend the submitter contact Mr. Darrell Flocken (NCWM NTEP Administrator) for input on any proposed language.
- Proposal will affect not only electric vehicle fueling devices, so also recommend the submitter seek input from industry and regulators addressing other device types.
- NIST HB 130 already encourages states to amend the regulation to include a provision allowing them to conduct an evaluation in instances where formal NTEP Type Evaluation does not apply:
    - Such provisions would allow these states to conduct their own evaluation and they will not likely exempt devices from type evaluation.
    - Instead, such states would conduct their own type evaluation and/or accept type evaluation certificates issued by other organizations.
- Granted there are states that do have these provisions in the laws:

OWM Executive Summary for NTP-23.1 Section 4. Prohibited Acts and Exemptions

- Provisions in the model regulation for "exemptions" are intended to set implementation dates for when the state began requiring type evaluation and traceability to an active Certificate of Conformance:
  - These clauses are not device category- or model-driven and are intended to serve the best interests of business, consumers, and the regulatory authority.
- It is unlikely that states will be willing to adopt a clause that would allow a given "type" to be exempt from type evaluation for future installations.

Table 3. Summary of Recommendations

NTP-23.1. – Section 4. Prohibited Acts and Exemptions

	V	D	W	A	I	Notes*	Comments
Submitter	✓						
OWM						5	
CWMA		✓					
WWMA			✓				
SWMA		✓					
NEWMA			✓				
NCWM							

***Notes Key:**
1 – Submitted modified language
2 – Item not discussed
3 – No meeting held
4 – Not submitted on agenda
5 – No recommendation or not considered

Item Under Consideration:

Amend Handbook 130 Uniform Regulation for National Type Evaluation as follows:

Section 4. Prohibited Acts and Exemptions

…

(m) A device that is not traceable to an active CC may be used if the following conditions are met:

(1) Written notification is received by the Director prior to the device being placed in service;

(2) The notification is accompanied by documentation demonstrating that the performance and construction of the device type is in conformance with the specifications, tolerances,

and other technical requirements of NIST Handbook 44 effective on the date that the device will be placed in service; and

(3) The Director has approved the use of the device type pursuant to this paragraph. (Added 20XX)

NIST OWM Detailed Technical Analysis:

1) Prior to submitting the proposal to modify the prohibited acts and exemptions applicable to NTEP regulations, it was recommended the submitter contact Mr. Darrell Flocken (NCWM NTEP Administrator) for input on any proposed language.

2) Any such proposed change will affect not only electric vehicle fueling devices, so input from industry and regulators addressing other device types will be important to any such proposal.

3) NIST Handbook 130 Uniform Regulation for National Type Evaluation already encourages states to amend the regulation to include a provision allowing them to conduct an evaluation in instances where formal NTEP Type Evaluation does not apply (not the case in this situation [i.e., EVFSs]). NIST OWM acknowledges the submitter's observations that not all states have specifically added such a clause to their regulation. Further research may be needed on the inclusion of this statement in the Note as part of the Application in Section 1.

4) States that have adopted such provisions which would allow them to conduct their own evaluation will not likely exempt devices from type evaluation. Instead, such states would conduct their own type evaluation (using their own or other available standards and type evaluation criteria that they deem appropriate) and/or accept type evaluation certificates issued by other organizations (e.g., CA Type Evaluation, other states' type evaluation certificates).

5) The provisions in the model regulation for "exemptions" are intended to set implementation dates for when the state began requiring type evaluation and traceability to an active Certificate of Conformance. These clauses are not (as written in the model regulation) device category- or model-driven and are intended to serve the best interests of business, consumers, and the regulatory authority.

6) It is unlikely that states will be willing to adopt a clause that would allow a given "type" (i.e., a specific model of device) to be exempt from type evaluation for future installations.

Regional Association Reporting:

Western Weights and Measures Association

At the 2022 WWMA Annual Meeting, Mr. Michael Keilty (representing self) recommended withdrawal. He spoke concerns that this would bypass the NTEP type approval process and have ramifications for all other devices besides EVFS. Mr. Kevin Schnepp (CDFA/DMS) recommended withdrawal, the non-retroactive periods address this issue, and if an item can meet the criteria of part (ii) it can be NTEP type approved. Mr. Kurt Floren (Los Angeles County, California) suggested withdrawal of this item. There

was support from representatives Mr. Chris King (Siemens) and Ms. Scheleese Goudy (Electrify America). Ms. Goudy explained that states such as Florida have recently developed regulations in order to allow the director to accept devices. The Western recognizes the concerns addressed by this proposal but feel this is not the appropriate method to solve them. Rather than modifying the NTEP approval process, these concerns would best be addressed by non-retroactive dates or other EVFS specific codes. Therefore, the WWMA L&R Committee recommends this item be withdrawn.

Central Weights and Measures Association

At the 2022 CWMA Interim Meeting, Ms. Scheleese Goudy (Electrify America) commented that NTEP does not provide evaluation certificates for all types of devices. This item would provide exceptions for devices in service prior to NTEP evaluating and certifying a new device category. Mr. Doug Rathbun (Illinois) commented he is not sure whether he supports this item and is concerned it could make the state vulnerable to litigious action. Mr. Craig VanBuren (Michigan) supports the concept but believes the item needs further development. Michigan already has provisions for non-NTEP devices that are more stringent than this proposal in some areas. Mr. Michael Kelty (Endress+Hauser) commented he believes the item needs further development. The term "not traceable" and no retroactive date are two areas he believes need further development. Mr. Doug Musick (Kansas) concurs with others and indicated he is unsure if this item is necessary because NTEP states already have provisions for non-NTEP devices. Mr. Musick expressed concern that while this is being discussed for electric vehicle charging stations it would apply to all devices. Mr. Loren Minnich (Kansas) suggested using OIML or Measurement Canada as an alternative certifying body to NTEP. Mr. Joe Smith (Wisconsin) commented this item opens the possibility for non-uniformity among neighboring states. Due to concerns expressed during open hearings and those expressed during working session discussions, the Committee recommends this item be given Developing status and returned to the submitter for further development based on comments heard during open hearings.

Southern Weights and Measures Association

At the 2022 SWMA Annual Meeting, Ms. Goudy stated that the proposal's purpose is to address NTEP's lack of uniform regulation provisions in dealing with transitions for devices that were not previously issued certificates of conformance and now are (for example EV chargers). She is in favor of this as a Voting Item.

Mr. Michael Keilty (Endress + Hauser) stated that this language creates a definition of exemption against using NTEP and doesn't think that is safe to use for all types (meters, scales, charger, dispensers). He opposes this item and doesn't want non-traceable devices to be installed. He asks that this item be withdrawn.

Mr. John Stokes (South Carolina) questioned if there isn't a certificate of conformance then how it gets in use. At first, he was undecided and then later clarified was against it as presented.

Mr. Ken Ramsburg (Maryland) mentioned the letter from the director of NTEP that its purpose isn't to evaluate all devices in the marketplace. He suggested inquiring if there is a list of devices they plan to evaluate. Are they going to evaluate AC/DC or WIMS?

Mr. Hal Prince (Florida) mentioned that this language is similar to language already adopted in Florida rule. While this was right for Florida (since Florida's language is more restrictive) he recommends proceeding with caution as this may open the door for others to sidestep NTEP which wasn't the intention. He also mentioned that NTEP will be offering certification for AC devices and conditional for DC charging devices based on California Type Evaluation Program.

Mr. Tory Brewer (West Virginia) commented that use of the word "active" was confusing since some NTEP "inactive" certificates are still acceptable to use. He suggested possibly changing the word "active" to "valid". Mr. Steve Benjamin (North Carolina) commented that the Director cannot be notified if devices are already in place. Mr. Michael Keilty – Endress + Hauser attempted to distinguish between Active vs Inactive.

After the comments received from the floor there were many questions that remained. The Committee believed this item has merit and needs to move forward so it can be further vetted by the membership and possibly further developed. The Committee gives a Developing status to this item.

Northeastern Weights and Measures Association

At the 2022 NEWMA Interim Meeting, Mr. Keith Bradley (Electrify America) commented NTEP does not evaluate all devices, and so there is no need for a certificate if NTEP doesn't not evaluate a particular device. He believes provisions should be made for devices in service prior to the expansion of NTEP evaluation to cover such device. Mr. Bradley further commented the simplest solution is to give state agencies discretion to allow a waiver for such devices. He further stated that the model language as it currently exists inadvertently hamstrings states from regulating devices not covered by NTEP found in their states. Chair Sakin asked if state agency director's already have the authority to allow waivers. Ms. Lisa Warfield (NIST OWM Technical Advisor) commented that NIST has not had an opportunity to evaluate this item but will do so before the 2023 NCWM Interim Meeting. Mr. Keilty commented that he feels this is a worrisome precedent. He believes that this provision could have unintended consequences to allow manufacturers to place devices into service before they have been NTEP approved. Mr. John McGuire (New Jersey) concurs with Mr. Keilty and believes the item should be withdrawn. Mr. Walt Remmert (Pennsylvania) commented that he also believes the item should be withdrawn, as does Mr. Jimmy Cassidy (Massachusetts). The Committee recommends the item be withdrawn.

FLR – Uniform Fuels and Automotive Lubricants Regulation

FLR-23.3 Section 2.20. Hydrogen Fuel.

Source: Quong and Associates

Submitter's Purpose and Justification:

Add equivalent hydrogen quality standard, ISO 14687 to 2.20.

As hydrogen fuel cell vehicles expand worldwide, the codes and standards that support them have also moved to an international stage. Currently, most of the hydrogen quality requirements for fuel cell vehicles have occurred under the International Organization for Standardization (ISO) 14687 "Hydrogen fuel quality – Product specification". The latest revision of ISO 14687occurred in 2019, and SAE 2719 was updated in 2020 to match. The attached document compares the latest hydrogen fuel quality specifications in ISO 14687 2019 and SAE J2719 2020. Having both requirements will allow the user of the station to use the most updated specification and ensure that fuel cell vehicles are protected from contaminated fuel.

Some may argue that Argument: The updates in ISO 14687 could be considered a relaxation of the hydrogen quality requirements. The submitter explained that the changes were made to provide flexibility for contaminates which could not damage the fuel cell vehicle, or combine contaminates with similar characteristics, such as inert gases or carbon monoxide/ formaldehyde/formic acid.

The submitter requested that this be a Voting Item.

OWM Executive Summary for FLR-23.3 Section 2.20. Hydrogen Fuel
OWM Recommendation: OWM recommends that this item either be returned to the Submitter or to FALS for additional development. • The weights and measures community recognizes for more than two decades a concerted effort in the hydrogen community to globally align related standards. • Address the concerns raised about the proposal resulting in dual fuel quality standards in effect should there be a delay in the alignment process. What are the mechanisms in place for rapid alignment of the standards and the technical committee with oversight having the ability to recognize emerging test methods for the verification of constituent values? • There should be clarification on whether specific portions of the ISO standard applicable to fueling road vehicles must be cited in the fuel specification requirement.

Table 3. Summary of Recommendations

FLR-23.3. – Section 2.20. Hydrogen Fuel

	V	D	W	A	I	Note*	Comments
Submitter	✓						
OWM		✓					
CWMA	✓						
WWMA	✓					1	
SWMA		✓					
NEWMA						5	
NCWM							

***Notes Key:**
1 - Submitted modified language
2 - Item not discussed
3 - No meeting held
4 - Not submitted on agenda
5 - No recommendation or not considered

Item Under Consideration:

Amend Handbook 130 Uniform Fuels and Automotive Lubricants Regulation as follows:

2.20 Hydrogen Fuel. – Shall meet the latest version of SAE J2719, "Hydrogen Fuel Quality for Fuel Cell Vehicles." **or ISO 14687 "Hydrogen fuel quality — Product specification"**.

(Added 2012) **(Amended 20XX)**

NIST OWM Detailed Technical Analysis:

The weights and measures community recognizes for more than two decades a concerted effort in the hydrogen community to globally align related standards. Concerns have been raised about the proposal resulting in dual fuel quality standards in effect should there be a delay in the alignment process. Clarification needs to be sought on the mechanisms in place for rapid alignment of the standards and the technical committee with oversight having the ability to recognize emerging test methods for the verification of constituent values. NIST OWM notes that there should also be clarification on whether specific portions of the ISO standard applicable to fueling road vehicles must be cited in the fuel specification requirement.

Regional Association Reporting:

Western Weights and Measures Association

At the 2022 WWMA Mr. Kevin Schnepp (CDFA/DMS) mentioned that the two systems, ISO and SAE, are not always aligned. They are meant to be aligned but when changes are made those changes may be adopted at different times (example of 6-month gap in 2019). He also mentioned that the reference standards in the ISO are specifically section (d) of 14687, and this should be referenced specifically. He also mentioned that there may not be a need for this item. The Committee suggests the edits below.

> **2.20. Hydrogen Fuel**. – Shall meet the latest version of SAE J2719, "Hydrogen Fuel Quality for Fuel Cell Vehicles." **Or ISO14687 Grade (D) "Hydrogen fuel quality – Product specification".**
> (Added 2012) **(Amended 20XX)**

The WWMA L&R Committee recommends Voting status with the above revisions based on the comments heard.

Central Weights and Measures Association

At the 2022 CWMA Interim Meeting, Mr. Doug Rathbun (Illinois) commented he supports this item and believes it is ready for Voting status. Hearing no further comments during open hearings, the Committee concurs the item is fully developed and ready for Voting status. The Committee recommends the National L&R Committee consider combining this item with FLR-23.4 as a block.

Southern Weights and Measures Association

At the 2022 SWMA Annual Meeting, Dr. Matt Curran (Florida) commented that only one reference should be listed if equivalent. Listing both could cause confusion.

Ms. Lisa Warfield (NIST OWM) commented that Juana Williams (NIST OWM) is working with the Hydrogen National Work Group and should have an update by January 2023.

The Committee concurred with Dr. Curran that the item needs further development to determine which standard will be referenced and recommends it to be a Developing Item.

Northeastern Weights and Measures Association

At the 2022 NEWMA Interim Meeting, no comments were heard. The Committee does not have a recommendation for this item.

FLR-23.4 Section 4.3. Dispenser Filters

Source: Quong and Associates

Submitter's Purpose and Justification:

Add a filter requirement for hydrogen commercials.

Filter requirements for gasoline and diesel dispensing systems are already included in NIST Handbook 130 and are intended to protect the vehicle from particulate contamination. The same requirement is necessary for gaseous hydrogen dispensing systems because the particulates can harm the vehicle valves and other components. In addition, a liquid filter is necessary because water, oil, or other contaminates can freeze inside valves or cause damage to the fuel cell stack. The National Renewable Energy Laboratory (NREL) captures hydrogen quality and other data from US hydrogen dispensers. The attached slides show that particulates and hydrogen have exceeded the current limit set in SAE J2719 and required in Section 2.20 of NIST Handbook 130. Adding a filter requirement, similar to other fuels, is a simple solution that ensures proper hydrogen fuel quality and protects the vehicle from damage.

Some may argue that the requirement for filters is onerous and not necessary, but the submitter adds that filters are commonly used at most hydrogen dispensers and are required by the following hydrogen standards (see supporting documents on the NCWM website for exact text):

- CSA/ANSI HGV 4.1 "Standard for hydrogen-dispensing systems"
- CSA/ANSI HGV 4.9 "Hydrogen fueling stations"
- ISO 19880-1 "Gaseous hydrogen — Fueling stations — Part 1: General requirements"

The submitter requested that this be a Voting Item as a retroactive requirement.

OWM Executive Summary for FLR-23.4. – Section 4.3. Dispenser Filters

OWM Recommendation: OWM recommends that this item be assigned to either back to the Submitter or to FALS for additional development.

Section 4.3.1. (c) should be reflected in bold and underscore.

- The proposal would include a new subparagraph 4.3.1.(c) in NIST HB 130 Part IV. Uniform Regulations F. Uniform Fuels and Automotive Lubricants Regulation 4.3. Dispenser Filters as part of Section 4.3.1. Engine Fuel Dispensers. Although the phrase "hydrogen engine" is used to describe the systems that power a hydrogen car, the HB 130 definition of the term "engine fuel," is limited to fuels used to generate power in an internal combustion engine (ICE). Hydrogen fuel is intended for consumption in a vehicle, or an electricity production device equipped with an ICE or *fuel cell*. Is the placement of the proposed new hydrogen gas dispenser filter requirement under the "engine fuel dispensers" heading the proper descriptor when most hydrogen cars are powered by

OWM Executive Summary for FLR-23.4. – Section 4.3. Dispenser Filters

fuel cells? Recommend a separate new subsection designation and heading for this proposed dispenser filter requirement to read: **4.3.3. Delivery of Hydrogen Gas**.

- What is the current input on the proposal from hydrogen dispenser manufacturers, hydrogen car manufacturers, and owner/operators of dispensers produced and installed prior to 2022?

Table 3. Summary of Recommendations

FLR-23.4. – Section 4.3. Dispenser Filters

	V	D	W	A	I	Note*	Comments
Submitter	✓						Requested a retroactive requirement.
OWM		✓					
CWMA	✓						
WWMA	✓					1	
SWMA	✓						
NEWMA						5	
NCWM							

***Notes Key:**
1 - Submitted modified language
2 - Item not discussed
3 - No meeting held
4 - Not submitted on agenda
5 - No recommendation or not considered

Item Under Consideration:

4.3. Dispenser Filters

4.3.1. Engine Fuel Dispensers

(a) All gasoline, gasoline-alcohol blends, gasoline-ether blends, ethanol flex fuel, and M85 methanol dispensers shall have a 10micron or smaller nominal pore-sized filter.

(b) All biodiesel, biodiesel blends, diesel, and kerosene dispensers shall have a 30 micron or smaller nominal pore-sized filter.

(c) All gaseous hydrogen dispensers shall have a 5 micron or smaller nominal pore-sized filter, and a filter to protect the vehiclefrom liquid contamination.

(Amended 2014 **and 20XX)**

NIST OWM Detailed Technical Analysis:

The proposal would include a new subparagraph 4.3.1.(c) in NIST HB 130 Part IV. Uniform Regulations F. Uniform Fuels and Automotive Lubricants Regulation 4.3. Dispenser Filters as part of Section 4.3.1. Engine Fuel Dispensers. Although the phrase "hydrogen engine" is used to describe the systems that power a hydrogen car, the HB 130 definition of the term "engine fuel," is limited to fuels used to generate power in an internal combustion engine (ICE). Hydrogen fuel is intended for consumption in a vehicle, or an electricity production device equipped with an ICE or fuel cell. Is the placement of the proposed new hydrogen gas dispenser filter requirement under the "engine fuel dispensers" heading the proper descriptor when most hydrogen cars are powered by fuel cells? Recommend a separate new subsection 4.3.3. Delivery of Hydrogen Gas.

Has the submitter considered is input on the proposal from hydrogen dispenser manufacturers, hydrogen car manufacturers, and the owner/operators of dispensers produced and installed prior to 2022?

Regional Association Reporting:

Western Weights and Measures Association

At the 2022 WWMA Annual Meeting, Mr. Kevin Schnepp (CDFA/DMS) supports this item moving forward as voting. The WWMA L&R Committee recommends Voting status based on the comments heard with the following minor editorial change:

> **(c) All gaseous hydrogen dispensers shall have a 5 micron or smaller nominal pore-sized filter and a filter to protect the vehicle from liquid contamination.**
> (Amended 2014 **and 20XX**)

Central Weights and Measures Association

At the 2022 CWMA Interim Meeting, Mr. Doug Rathbun (Illinois) supported this item and believes it is ready for Voting status. He further believes it could be blocked with FLR 23.3. Mr. Ivan Hankins (Iowa) commented that he does not know if the micron size is appropriate. Mr. Hankins further commented the Purpose section of this item should read: "Add a filter requirement for commercial hydrogen." Mr. Rathbun suggested to refer to the additional items that were submitted to clarify any questions. The Committee recommends the National L&R Committee consider combining this item with FLR-23.3. The Committee concurs this item is fully developed and is ready for Voting status with Mr. Hankins' recommended change to the Purpose statement.

Southern Weights and Measures Association

At the 2022 SWMA Annual Meeting, no comments were heard from the floor. The Committee feels this item is fully developed and recommends it as a Voting Item.

Northeastern Weights and Measures Association

At the 2022 NEWMA Interim Meeting, no comments were heard. The Committee does not have a recommendation for this item.

PPV – Examination Procedure for Price Verification

PPV-23.1 Inspection Procedures for Online Orders

Source: Kansas Department of Agriculture

Submitter's Purpose and Justification:

Create price verification procedures for online orders. The current procedure is inadequate to address pricing accuracy when shopping online. The submitter acknowledges that some may believe this is impractical.

Submitter requested this be assigned to a Task Group.

OWM Executive Summary for PPV-23.1. – Inspection Procedures of Online Orders

OWM Recommendation: OWM believes this item may have merit and encourages this to be further developed by either the submitter or an NCWM TG should be created to see if this Inspection Procedure is needed by the states.

- If states believe the current Examination Procedure for Price Verification is inadequate or impractical to use to conduct price verification inspections for online or e-commerce sales, additional details are needed as to how the current procedure falls short so that a proper evaluation can be made.
- In addition, it should be recognized that an e-commerce is currently under development that will have an impact on how online price verification procedures will be developed.
- The title within NCWM Publication 15 states "Exam Procedure" the correct title should be "Examination Procedure for Price Verification".

Table 3. Summary of Recommendations

PPV-23.1. – Inspection Procedures of Online Orders

	V	D	W	A	I	Note*	Comments
Submitter				✓			
OWM		✓		✓			
CWMA				✓			
WWMA					✓		
SWMA				✓			
NEWMA		✓					
NCWM							

Table 3. Summary of Recommendations							
PPV-23.1. – Inspection Procedures of Online Orders							
	V	**D**	**W**	**A**	**I**	**Note***	**Comments**
***Notes Key:** 1 - Submitted modified language 2 - Item not discussed 3 - No meeting held 4 - Not submitted on agenda 5 - No recommendation or not considered							

NIST OWM Detailed Technical Analysis:

The submitter indicated that the current Examination Procedure for Price Verification is inadequate for online price verification and that some may believe it is impractical. Specific details as to why this procedure is inadequate or impractical would enable membership and the Committee determine if the item has merit before determining if it should be further developed by the submitter or assigned to an NCWM Task Group.

If states believe the current Examination Procedure for Price Verification is inadequate or impractical to use to conduct price verification inspections for online or e-commerce sales, more specific details are needed as to how the current procedure falls short so that a proper evaluation can be made.

It should be recognized that an e-commerce is currently under development that will have an impact on how online price verification procedures will be developed.

Regional Association Reporting:

Western Weights and Measures Association

At the 2022 WWMA Annual Meeting, Mr. Kurt Floren (Los Angeles County, California) recommended withdrawal of this item because it is premature. His thoughts were that e-commerce regulations, including several proposals in this agenda, are still being developed. We cannot develop inspection procedures to enforce regulations that do not yet exist. The WWMA L&R Committee recommends this item as Informational; formation of a task group is premature until we have e-commerce model regulations in place.

Central Weights and Measures Association

At the 2022 CWMA Interim Meeting, Mr. Loren Minnich (Kansas) commented that his state received a complaint from a consumer who placed an online order, and they were charged a different price than was posted. He is asking the Committee to consider developing a procedure for online ordering. The Committee is recommending the National L&R Committee consider assigning this item to a work group, task force, or other appropriate group for further development.

Southern Weights and Measures Association

At the 2022 SWMA Annual Meeting there were no comments were received from the floor. The Committee believes this item has merit and recommend as an Assigned Item on the NCWM agenda.

Northeastern Weights and Measures Association

At the 2022 NEWMA Interim Meeting, Mr. John McGuire (New Jersey) commented that this item has merit and should be further developed by a task group; he recommends it as a Developing item. Mr. Walt Remmert (Pennsylvania) concurs and believes that Kansas should be invited to lead the group. Mr. McGuire further commented that PALS is addressing e-commerce but not price verification. Mr. Jim Cassidy (Massachusetts) believes the proposal should go back to the submitter for further development. Mr. Jim Willis (New York) asked if Informational status would be more appropriate. Ms. Lisa Warfield, (NIST Technical Advisor) commented that if the Committee believes the item has merit, it can recommend further action to the NCWM L&R Committee. The Committee concurs to recommend to the NCWM L&R Committee that it should pursue further development of the item in the manner in which is most productive. Therefore, the Committee recommends Developing status for this item.

NET – Handbook 133: Checking the Net Content of Packaged Goods

NET-22.1 A HB133, Section 1.2.6. Deviations Caused by Moisture Loss or Gain and Section 2.3.8. Table 2-3 Moisture Allowances.

(***Note:*** At the 2022 NCWM Annual Meeting, the Committee removed this item from Block 3 Cannabis. All background information pertaining to this Item appears below.)

Source: NCWM Cannabis Task Group

Submitter's Purpose and Justification:

Establish an acceptable Net Weight allowance for Cannabis, which is related to the MOS Form 15 related to water activity and the Packaging and Labeling Form 15 Sections 2 and 10.

Since *Cannabis* and *Cannabis*-containing products were first legalized by various states, the industry has undergone an unprecedented expansion. Even though these products haven't received Federal approval at this time, more and more states have supported *Cannabis* and *Cannabis*- containing products for medicinal or adult use under their own laws. This has resulted in boutique markets developing across the country with restrictive state boundaries for lack of clarity and uniformity in commercialization of these products.

Cannabis and *Cannabis*- containing products are unique in many aspects; they have a niche as medicine, have resulted in the development of adult use markets, and have an incredible array of different manufacturing and industrial applications. Some of these products contain controlled substances which presents a special concern for the safety and welfare of consumers if misused or mishandled. Further, they are subject to strict regulations by multiple government agencies. *Cannabis* and *Cannabis*- containing products and applications range from non-food to food products for human and animal consumption through inhalation, ingestion, and/or topical or dermal application. They can be used as ingredients in other commodities, changing in most cases the product identity to C*annabis* products. Some *Cannabis* is very susceptible to environmental conditions easily losing or gaining moisture with consequences impacting net quantity, degradation of active cannabinoids, and/or microbial proliferation depending on the situation. These are just some of the reasons there are many concerns and uncertainty surrounding the moisture allowance of *Cannabis*.

In the retail *Cannabis* trade, insufficient attention and guidance is given to moisture migration in or out of some *Cannabis* packaging and as a result, the contents of some *Cannabis* flower packaging have been found to be underweight, resulting in the patient/consumer paying for weight that they are not receiving. For

instance, underweight complaints are the #1 consumer complaint in Oregon. See attached table for data from multiple stores of four brands and the incidence of underweight contents. ***Preview:*** If you were shopping any one of 3 stores of a popular brand, you'd have a 71 % chance of buying a supposedly 1.75 g package that is 21.6% underweight, meaning you have a 71 % chance of being ripped off by $5 (assuming a $10/g price). The lowest incidence of underweight? 54 %. The lowest percent underweight? 2.75 %.

For the fairness and safety of *Cannabis* consumers, a 3% ± weight variance based on enforcement of acceptable moisture range needs to be established. A 3% allowance aligns with other known commodities and with California regulations that outline ± 3%.

Why 3 %? Consistent with other items in NIST handbook, aligns with California. If the boundaries are too wide, it exposes the program to diversion.

Is underweight really an issue? I filed Public Records requests with every state that allows *Cannabis* flower commerce. Each of them told me they keep no official records on underweight complaints. However, Oregon went on record telling me underweight is one of their largest complaints (attached). As for one other state, see attached data from Colorado that recorded 69 separate container purchases from 18 separate stores within four brands.

The submitter asked that this be a Voting Item in 2022.

OWM Executive Summary for NET-22.1 – HB133, Section 1.2.6. Deviations Caused by Moisture Loss or Gain and Section 2.3.8. Table 2-3 Moisture Allowances.

OWM Recommendation[1]: OWM recognizes the importance of this work and the progress the TG has made thus far. However, there are some significant issues that need to be addressed before this item is ready for adoption. OWM recommends the item remain Assigned to the Cannabis Task Group.

- OWM does not concur with adding a 3 % weight variance without study, documentation, and verification of results.
- The 3% was assigned by the Cannabis TG; the TG based this value on other known commodities stated within NIST HB 133 Table 2-3 Moisture Allowance and to align with California regulations. The Cannabis Moisture Loss WG has not shared any moisture allowance data with the Cannabis TG or L&R Committee.
- OWM recognizes that there was only one member of the Cannabis TG Moisture Loss WG. We encourage those other members to join this group, submit data, and reach consensus on bringing language forward to the L&R Committee. In 1988, NCWM Task Force developed the Guidelines for NCWM Resolution of Requests for the Recognition of Moisture Loss in Other Packaged Foods in NIST Handbook 130 NCWM Policy, Interpretations and Guidelines Section 2.5.6. we encourage the Cannabis Moisture Allowance TG to follow this guidance.
- They would need to conduct a nationwide scientifically valid study that reflects regional environment and seasonal changes in humidity. Any studies should also consider the different types of packaging into consideration. This needs to be for both moisture loss and moisture gain (as being proposed).
- Two key components, among others, for any industry in determining moisture loss include:

OWM Executive Summary for NET-22.1 – HB133, Section 1.2.6. Deviations Caused by Moisture Loss or Gain and Section 2.3.8. Table 2-3 Moisture Allowances.

1. having "real world" data on product as found in the retail marketing chain (not just laboratory moisture loss data) and

2. collect data on industry-wide basis (rather than from only one or two companies).

- A modification to NIST Handbook 133 procedures will need to be submitted for consideration. Current procedures are written to guide inspectors only on applying a moisture allowance when a sample has a negative average error.

- OWM recommends that the state directors be surveyed (see OWM general comments on Block 3) to determine if they intend to have their inspectors take enforcement action on overweight packages of *cannabis*. If they do not implement this type of enforcement action for the reason, they doubt that the public or courts would find those cases justify prosecution, then the approach should probably not be added to NIST Handbook 133 and remain as guidance.

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[1] In contrast to hemp, marijuana remains a Schedule I substance under the Controlled Substances Act. NIST does not have a policy role related to the production, sale, distribution, or use of cannabis (including hemp and marijuana). NIST participates in the National Conference of Weights and Measures (NCWM) as part of NIST's statutory mission to promote uniformity in state laws, regulations, and testing procedures.

Table 3. Summary of Recommendations

NET-22.1 – HB133, Section 1.2.6. Deviations Caused by Moisture Loss or Gain and Section 2.3.8. Table 2-3 Moisture Allowances.

	V	D	W	A	I	Note*	Comments
Submitter	✓						
OWM				✓			
CWMA	✓						
WWMA				✓			
SWMA				✓			
NEWMA				✓			
NCWM							

***Notes Key:**
1 – Submitted modified language
2 – Item not discussed
3 – No meeting held
4 – Not submitted on agenda
5 – No recommendation or not considered

Item Under Consideration:

1.2.6. Deviations Caused by Moisture Loss or Gain

Deviations from the net quantity of contents caused by the loss or gain of moisture from the package are permitted when they are caused by ordinary and customary exposure to conditions that normally occur in good distribution practice and that unavoidably result in change of weight or measure. According to regulations adopted by the U.S. Environmental Protection Agency, no moisture loss is recognized on pesticides. (see Code of Federal Regulations **40 CFR 156.10**.)

1.2.6.1. Applying a Moisture Allowance

Some packaged products may lose or gain moisture and, therefore, lose or gain weight or volume after packaging. The amount of moisture loss depends upon the nature of the product, the packaging material, the length of time it is in distribution, environmental conditions, and other factors. Moisture loss may occur even when manufacturers follow good distribution practices. Loss of weight "due to exposure" may include solvent evaporation, not just loss of water. For loss or gain of moisture, the moisture allowances may be applied before or after the package errors are determined.

To apply an allowance before determining package errors, adjust the Nominal Gross Weight (see Section 2.3.6. "Determine Nominal Gross Weight and Package Errors"), so the package errors are increased by an amount equal to the moisture allowance. This approach is used to account for moisture loss in both the average and individual package errors.

It is also permissible to apply the moisture allowances after individual package errors and average errors are determined.

Example:
A sample of a product that could be subject to moisture loss might fail because the average error is minus or the error in several of the sample packages are found to be unreasonable errors (i.e., the package error is greater than the Maximum Allowable Variation (MAV) permitted for the package's labeled quantity).

You may apply a moisture allowance after determining the package errors by adding the allowance to the Sample Error Limit (SEL) and then, comparing the average error to the SEL to determine compliance. The moisture allowance must be added to the MAV before evaluating sample errors to identify unreasonable minus errors**.**

(Amended 2010)

This handbook provides "moisture allowances" for some meat and poultry products, flour, pasta, ***Cannabis*** **(this only includes plant material but does not include products containing** ***Cannabis*****)** and dry pet food. (See Chapter 2, Table 2-3. "Moisture Allowances") These allowances are based on the premise that when the average net weight of a sample is found to be less than the labeled weight, but not by an amount that exceeds the allowable limit, either the lot is declared to be within the moisture allowance or more information must be collected before deciding lot compliance or noncompliance.

Test procedures for flour, some meat, and poultry are based on the concept of a "moisture allowance" also known as a "gray area" or "no decision" area (see Section 2.3.8. "Moisture Allowances"). When the average net weight of a sample is found to be less than the labeled weight,

but not more than the boundary of the "gray area," the lot is said to be in the "gray" or "no decision" area. The gray area is not a tolerance. More information must be collected before lot compliance or noncompliance can be decided. Appropriate enforcement should be taken on packages found short weight and outside of the "moisture allowance" or "gray area."

(Amended 2002)

Table 2-3. Moisture Allowances		
Verifying the labeled net weight of packages of:	**Moisture Allowance is:**	**Notes**
Flour	3 %	
Dry pet food	3 %	Dry pet food means all extruded dog and cat foods and baked treats packaged in Kraft paper bags and/or cardboard boxes with a moisture content of 13 % or less at time of pack.
Pasta products	3 %	Pasta products means all macaroni, noodle, and like products packaged in kraft paper bags, paperboard cartons, and/or flexible plastic bags with a moisture content of 13 % or less at the time of pack.
Borax	see Section 2.4. Borax	
Cannabis	**3 %**	***Cannabis* means plant material only, and not products containing *Cannabis*, whether containing more than 0.3 % Total Delta-9 THC (also known as cannabis, Marijuana or Marihuana) or containing 0.3 % or less Total Delta-9 THC (also known as Hemp).**
Wet Tare Only[1]		
Fresh poultry	3 %	Fresh poultry is defined as poultry above a temperature of – 3 °C (26 °F) that yields or gives when pushed with the thumb.
Franks or hot dogs	2.5 %	
Bacon, fresh sausage, and luncheon meats	0 %	For packages of bacon, fresh sausage, and luncheon meats, there is no moisture allowance if there is no free-flowing liquid or absorbent material in contact with the product and the package is cleaned of clinging material. Luncheon meats are any cooked sausage product, loaves, jellied products, cured products, and any sliced sandwich-style meat. This does not include whole hams, briskets, roasts, turkeys, or chickens requiring further preparation to be made into ready-to-eat sliced product. When there is no free-flowing liquid inside the package and there are no absorbent materials in contact with the product, Wet Tare and Used Dried Tare are equivalent.

Table 2-3.
Moisture Allowances

[1]Wet tare procedures must not be used to verify the labeled net weight of packages of meat and poultry packed at an official United States Department of Agriculture (USDA) facility and bearing a USDA seal of inspection. The Food Safety and Inspection Service (FSIS) adopted specific sections of the 2005 4th edition of NIST Handbook 133 by reference in 2008 but not the "Wet Tare" method for determining net weight compliance. FSIS considers the free-flowing liquids in packages of meat and poultry products, including single-ingredient, raw poultry products, to be integral components of these products (see Federal Register, September 9, 2008 [Volume 73, Number 175] [Final Rule – pages 52189-52193]).

NIST OWM Detailed Technical Analysis:

The weights and measures laws do not grant the director the authority to establish the moisture content limits for foods, drugs, or cosmetics. OWM recommends that Committee clearly state that weights and measures inspections conducted under this proposed regulation will be limited to only cannabis (the plant) and that there is no intent to expand to products containing cannabis. This statement of intent early in the consideration process may be helpful to future readers of the historical record.

For the reasons provided OWM does support the development of this proposal. OWM has provided similar guidance in the past for other products based on information from FDA.

Since the 1980's, OWM has worked with NCWM on moisture loss studies beginning with the creation of the NCWM Task Force on Commodity Requirements. The NCWM Task Force developed the Guidelines for NCWM Resolution of Requests for the Recognition of Moisture Loss in Other Packaged Foods (see NIST Handbook, NCWM Policy, Interpretations and Guidelines Section 2.5.6. in VI at **00-20-h130-vi-final-4.pdf)** which the NCWM adopted in 1988. Since its adoption, industry who contacts OWM for advice on how moisture allowance is developed is advised to follow the NCWM guidance. In addition, NCWM recognized considerations proposed by industry on moisture allowance. The rice industry and bar soap manufacturers approached OWM for information and were provided this advice. The pet food industry and pasta industries have both followed the NCWM guidance for moisture loss recognition and have been successful with proposal for moisture allowances being adopted by NCWM. In the interest of due process, interest of its own guidelines, and the precedents it has followed for more than 33 years, OWM recommends the Committee advise the cannabis industry to apply the same NCWM guidance. They would need to conduct a nationwide scientifically valid study that reflects regional environment and seasonal changes in humidity. Any studies should also consider the different types of packaging into consideration.

Two key components, among others, for any industry in determining moisture loss include: 1. having "real world" data on product as found in the retail marketing chain (not just laboratory moisture loss data) and 2. collecting data on an industry-wide basis (rather than from only one or two companies).

Supporting data based on nationwide scientifically valid moisture loss and moisture gain studies for packaged cannabis was not submitted with this proposal. Test procedures or limits on moisture loss or gain which are not based on scientifically established data, that occur during current good distribution practices, must be avoided as they likely violated due process (among other cases see especially Cook Family Foods, Ltd. v. Voss, 781 F. Supp. 1458 (C.D. Cal. 1991)). OWM is concerned that adding the proposed moisture allowances to NIST Handbook 133 without valid studies will make it difficult for the states to reduce or remove them in the future, if data from field testing or later research, indicates that they were either too large or too small.

This proposal involves limits on moisture loss and moisture gain, and it is likely that two studies will be required. In the past, NCWM focused on moisture loss but with this is an area where limits on moisture gain will be established therefore different test conditions will need to be considered and test protocols developed. Typically, desiccating products regain moisture at a slower rate than they lose moisture, but that rate depends on several variables. A moisture gain study may take longer and be carried out in controlled environmental conditions. Regardless both studies must encompass the typical shelf life of the packaged product. If the studies are not done in a way that is scientifically valid, which represents real world conditions, and reflects the typical packaging and shelf-life of products, they will NOT protect consumers or packers. They will also not ensure inventory or taxes are accurately maintained. In fact, if the proposed limits are too small or too large, they could impose unjustifiably higher costs on packers and those costs will be passed onto consumers.

A modification to NIST Handbook 133 procedures will need to be submitted for consideration. Current procedures are written to guide inspectors only on applying a moisture allowance when a sample has a negative average error.

Enforcement of net weight regulations where a moisture allowance is in question, requires the inspector to obtain additional information on the sample and may involve seizing samples for testing and contacting the packer to obtain production records for review. This is in part as to why they are sometimes treated as tolerances which can facilitate fraudulent packaging practices. If an unscrupulous packer underfills packages 1 % when there is an overly generous 3 % moisture allowance that results in the packer's filling practice not being verified. Typically, officials will invest the time and effort into moisture loss (and here gain) investigations when they receive consumer or competitor complaints. Even more frequently when a reseller believes that a supplier has repeatably shipped them underweight packages. Complaints from business owners will also arise when a particular shipment of expensive products and the complainant suspects, unreasonably underweight packages. Inspectors also pursue these types of investigations if they suspect, based on past testing, that a packer has repeatably delivered underweight packages that fall within a specified moisture allowance.

As noted above, it is important to stress that plus and minus values for moisture allowance are not tolerance limits. Under this moisture allowance approach inspectors will not be able to take enforcement actions as they currently do when using NIST Handbook 133.

Since the 1970s, weights and measures has treated overweight and overfilled packages as being acceptable because overpacking is limited by the packer for economic reasons. Inspectors do not take action on samples when the average error is positive (or when a minus error falls with the Sample Error Limit). Under this proposal inspectors will not be permitted to approve lots with positive average errors that fall within the 3 percent limit (for a 2 g package this 3 percent value = + 60 mg). Inspectors will not remove products from sale for being underweight within the 3 percent limit (− 60 mg) (unless the value is treated as a tolerance), until they take additional steps to find out more about the moisture content of the cannabis by consulting the packer to obtain production records, date of pack and inspection. They will also determine if the packer is following current good manufacturing and distribution practices and makes a determination that the overfilling or underfilling was reasonable or not. During this stage of the process the packaged goods are placed under a stop-sale-hold order and cannot be removed from the point of inspection until released.

OWM recommends that the state directors be surveyed (see OWM general comments on Block 3) to determine if they intend to have their inspectors take enforcement action on overweight packages of cannabis. If they do not implement this type of enforcement action for the reason, they doubt that the public

or courts would find those cases justify prosecution, then the approach should probably not be added to NIST Handbook 133 and remain as guidance.

The importance of limiting moisture gain could be well documented and presented as meriting enforcement action but any arguments would need to be persuasive. Taking enforcement action does occur when overpacking is used as an unfair trade practice (states have taken action against an ice packer who put 10 lb of ice in a bag and then labeled it 8 lb, and then advertises that the 8 lb bag lasts as long as a competitor 10 lb bag.

This proposal raises another question for the Committee is when there are no Maximum Allowable Variations (MAV) for plus package errors. OWM recommends that the Committee study the idea of changing this approach and have the MAV values apply to both positive and negative package errors when packaged cannabis is being tested.

OWM encourages the Committee to consider conducting a broad long-term study in cooperation with the cannabis industry to determine if the 10 percent MAV packages under 36 g is an appropriate for application to cannabis packages.

Cannabis is packaged on modern high precision weighing instruments and variations in packaging fill that occur in current good manufacturing practice are likely to be much less than they were when the 10 percent. MAV's for packages under 36 g was established in the early 1970s and at that time the data used was collected at both the point of pack and retail stores and included data for both small packages of foods and other consumer products. (*note:* for a 2 g package of cannabis the MAV is 200 mg)

A reference to an acceptable moisture test procedure must be developed included in this proposal. The moisture loss approach in NIST Handbook 133 anticipates that samples may need to be taken and tested if there is a significant enforcement action contemplated. If an inspector repeatably finds minus package errors within the 3 percent limits (for a 2 g package of cannabis this is ± 60 mg) the inspector will collect a sample and compare the moisture content as found along with the moisture content at time of pack information provided by the packer. If there is a dispute the inspector can share a sample with the packer for testing and the two values can be intercompared to ensure the labs are in agreement. This may occur in a situation where the product is consistently found to be underweight, between one to three percent, on lots that were just delivered from the packer or where the inspector suspects someone is packing shortweight and claiming it is moisture loss. Procedures need to be known in advance, so the state metrology laboratory has the necessary test equipment and trained personnel available to perform the test promptly.

In addition, adding a recognized moisture test procedure a detailed set of instructions for selecting and handling the moisture samples will need to be provided. If an inspector seizes samples for testing, they will need to follow good sampling procedures and handling practices to ensure the samples are protected and stored properly prior to and after testing. If there are legal or other restrictions that apply to the seizure, handling, storage, or transportation of cannabis samples then these can be included in the instructions to assist the inspector.

In developing the final proposal, the following questions need to be resolved.

- Will proactive compliance testing be done, audit testing or will this be done on complaint only basis?

- Consideration also needs to be given to how sampling will occur, how the lot is determined and whether a sample or the entire lot will fail.

- Educating the Weights and Measures community on moisture allowance and water activity.

- What are weights and measures protecting consumers and businesses from?

Summary of Discussions and Actions:

At the 2022 NCWM Interim Meeting, Dr. Lippa (NIST OWM) responded to general comments and answered questions that were posed to OWM as to what OWM can do with language within the NIST Handbooks. Dr. Lippa stated that OWM is in discussion with NIST Office of Chief Counsel regarding the cannabis agenda items at NCWM.

There are a few things for NIST related work: development to standards materials, high and low THC, and standards. There needs to be a distinction of the THC level that is regulated by the Farm Bill and the Controlled Substance Act (CSA).

According to the CSA, high THC marijuana is an illegal drug and NIST cannot support guidance, training, and standards Recognizing this issue, NIST will be able to publish Handbook 130 with this item, but they will have to provide a disclaimer citing the CSA. OWM is in communication with NIST legal counsel on this matter and will continue to work and advice with NIST legal.

The Committee requested the Cannabis TG submit information and data supporting their proposed moisture loss allowance, but it was not received. The Committee did not believe this item was ready for a Voting status and removed it from Block 3. This is assigned back to the NCWM Cannabis TG for additional development and to conduct a study relative to moisture loss allowance for Cannabis. They should establish data supporting the moisture loss allowance that the TG recommended. The Committee heard concerns that should the current moisture loss allowance be accepted without a study, the NCWM would be setting a precedence for future moisture loss allowance requests. The Committee considered comments urging the Committee to move forward with the ± 3 % moisture loss allowance but believes it would be imprudent to accept a moisture loss allowance without supporting data.

The Committee requested that the NCWM Cannabis TG follow NIST Handbook 130, NCWM, Interpretations and Guidelines Section 2.5.6. “Guidelines for NCWM Resolution of Requests for Recognition of Moisture Loss in Other Packaged Products” to establish the moisture allowances (loss and gain).

At the NCWM 2022 Annual Meeting, the Committee heard from the Cannabis TG Co-Chair Rutherford that work on studying moisture loss had begun with the State of Michigan, a packaging company, and a Cannabis provider to study moisture loss. Mr. Sefcik shared the Executive Summary comments.

The Committee considered the written NIST, OWM Analysis published on the NCWM website prior to the NCWM 2022 Annual Meeting.

Regional Association Reporting:

Western Weights and Measures Association

At the 2021 WWMA Annual Meeting, Ms. Hahn expressed concern with percentages of THC were of a more qualitative nature and not necessarily within the purview of weights and measures. Mr. Kurt Floren (Los Angeles County, California) addressed the comments and concerns on quality issues as a general

matter is not our purview in weights and measures. He mentioned how quality issues are a purview of weights and measures in matters of fuel with octane levels and viscosity of oils that must meet standards. He mentioned that this would be similar in Cannabis, in that THC levels are a part of the identity of the product, and that it is an important component in determining the value and allowing for value comparison. Mr. Floren stated that States are in different stages of regulation, and there is going to be a need for uniform standards. Mr. Joe Moreo (Trinity County, California) provided testimony that different species including Cannabis indica and Cannabis ruderalis should also be provided in the definition. Ms. Lisa Warfield (NIST OWM) provided testimony that was based on the OWM Analysis that was submitted as the supporting documentation.

The WWMA Committee recommends that this item be further developed. The Committee recommends reviewing the OWM analysis supporting documentation and addressing the concerns with testing procedure, testing equipment, and the need for technical studies regarding moisture loss and gain.

At the 2022 WWMA Annual Meeting, the L&R Committee did not solicit comments on this item, and recommends this item continues as Assigned to the NCWM Cannabis TG.

Central Weights and Measures Association

At the 2021 CWMA Interim Meeting, there was no discussion related to this item. Mr. Ivan Hankins (Iowa) supports the item moving forward with Voting status and suggests the development of a handbook for states who regulate cannabis. Based on comments during open hearings, supporting documents and discussions, the Committee believes this item is fully developed and ready for Voting status.

At the 2022 CWMA Annual Meeting, Ms. Warfield recommended this as a Developing Item or Assigned to the Cannabis Task Group to obtain additional information that OWM has recommended in their analysis.

At the 2022 CWMA Interim Meeting, Mr. Craig VanBuren (Michigan) and member of the NCWM Cannabis Task Group commented that his state is collecting data and is hopeful it will be ready for review by the 2023 NCWM Interim meeting, but certainly by the 2023 Annual Meeting. He believes it is ready for Voting status pending results of the data. Mr. Charlie Rutherford (ASTM and NCWM Cannabis TG) commented he appreciates the nearly unanimous support for this item from the CWMA. Mr. Doug Musick and Mr. Loren Minnich (Kansas) supported the item and believed it is ready for Voting status. Mr. Ivan Hankins (Iowa) concurred. Based on comments from open hearings, the Committee believes the item is fully developed and ready for Voting status. The Committee is aware once the data is collected, changes may occur to the original item, or the item may be deescalated if necessary.

Southern Weights and Measures Association

At the 2021 SWMA Annual Meeting, the Committee believed this Item is fully developed and recommended it to go to the NCWM L&R Committee with a Voting status. The Committee recommended the Cannabis TG take into consideration recommendations from the OWM analysis, i.e., the survey to State Directors, this could help identify the need for development of items in other sections of the Handbooks, i.e., Powers and Duties of the Director.

At the 2022 SWMA Annual Meeting, Mr. Rutherford provided a quick update. A cannabis company is willing to give flower for free and Michigan will begin the testing soon and anticipates an update to report at the NCWM 2023 Annual Meeting.

The Committee recommended this item to remain Assigned.

Northeastern Weights and Measures Association

At the 2021 NEWMA Interim Meeting, Mr. Sefcik commented that this item seeks to set a moisture allowance (loss or gain) and to his knowledge no work has been done or data provided to determine support the proposed plus or minus allowance. It appears to be arbitrary. Mr. Sikula concurs with Mr. Sefcik and questioned if water activity and moisture content are the same thing? Dr. Curran commented that water activity is free water available in the product. Moisture content measures the content of water in the product. Ms. Ayer asked if it is necessary for the lower-case cannabis to be used in parenthesis. Dr. Curran suggested it was a way to clarify terms. Mr. Rutherford commented that the TG believes the item is developed "enough" to be granted Voting status to have something in place to combat consumer fraud. Ms. Warfield recommended removal of the allowance in Table 2.3 and that it be placed in its own table and who would be responsible for training. The Committee recommends that NET 22.1 only be given Assigned. The Committee recommends that the TG review the OWM analysis for this item and address the need for technical studies (data) for moisture loss and gain.

At the 2022 NEWMA Annual Meeting, Mr. McGuire noted that the NCWM Cannabis TG, NCWM L&R Committee, and the NEWMA L&R Committee recommends removing this block and making them individual items to ensure each item is fully considered.

Mr. Cassidy noted the TG continues to work on dealing with moisture content and moisture in the case of cannabis is the opposite of what weight and measures is familiar with (moisture loss vs. moisture content). He related an analogy as to how a humidor operates to protect cigars, so cannabis needs to have a certain moisture content to be a viable product and needs to be tested that way. Mr. Cassidy questioned NIST's role in publishing these items. Mrs. Butcher responded, "once the NCWM votes and passes specific language, it is NIST's intent to publish the content, subject to legal review, reflecting that NIST does not have a policy role as to marijuana's status as a Schedule 1 controlled substance." NEWMA L&R Committee recommends this item continues to be an Assigned Item.

At the 2022 NEWMA Interim Meeting, Mr. Rutherford reported that Mr. Craig VanBuren (Michigan) is waiting on some implementation details to be clarified before work can begin in his lab. The Committee recommends this remain as an Assigned Item.

NET-22.2 Section 3.1.1 Test Methods and 3.X. Gravimetric Test Procedure for Viscous and Non-Viscous Liquids by Portable Digital Density Meter.

Source: Mr. Ronald Hayes (retired)

Submitter's Purpose and Justification:

Allow the use of digital density meters for package checking testing of viscous and non-viscous liquids. Current test procedures are slow and awkward due to the need of using borosilicate glassware for package checking. Digital density meters are fast, use small samples size (2 ml) and have built in thermometers.

- Fast and accurate.
- Using digital density meters equipped with built-in API density tables will not require the cooling samples to 60 °F.
- No need to "wet down" volumetric flasks before each measurement.
- Most non-food products may be recovered without contamination.

- Only small sample size (2 ml) of the product is needed for testing.
- No need for partial immersion thermometer or volumetric flasks.
- The current method in "Section 3.4 Volumetric Test Procedures for Viscous Fluids – Headspace" does not work for plastic oblong bottles often used for motor oil. Eliminates the entrapment of air in testing viscous fluids (i.e., motor oil, DEF, antifreeze, syrups, etc.).
- A NIST intern had done an investigation on the use portable density meters and NIST published a report in 2006 based only on that intern's study. The study is incomplete as the report references data in the appendix which does not exist. Therefore, the information is questionable and not in step with available technology.

The submitter requested that this be a Voting Item in 2022.

OWM Executive Summary for Section 3.1.1 Test Methods and 3.X. Gravimetric Test Procedure for Viscous and Non-Viscous Liquids by Portable Digital Density Meter.

OWM Recommendation: OWM recommends this be Assigned to a Task Group to assist with the further development of this proposal.

- Prior to the 2022 NCWM Annual, OWM submitted comments and revisions to the Item Under Consideration published in NCWM Pub. 16 (2022). OWM has actively been working with Mr. Hayes in addressing OWM concerns and as a result Mr. Hayes has made a several significant updates to the current Item Under Consideration. OWM believes that additional review and development on the Item Under Consideration within 2023 NCWM Publication 15, is needed by all stakeholders which includes outstanding comments and concerns outlined by OWM.
- Within each section of the Item Under Consideration OWM has provided a detailed analysis providing comments and recommendations from the OWM Lab Metrology Program to the current Item Under Consideration. OWM has also engaged an inspector from Los Angeles County, California to assist in reviewing and further develop this test procedure.
- OWM has engaged it metrology group to assist with the ongoing review and provide expertise on how to best validate the accuracy and performance of the meter, and to review the test procedure for clarity, usability, and reliability. OWM is in the process obtaining a portable digital density meter from two different manufacturers so we can have on hands experience which will enable OWM to provide to provide more recommendations to improve the test procedure.
- It is unusual for a new technical and detailed procedure to have no comments heard from membership. We encourage the membership to perform a critical review of the test procedure as it will have a significant impact in weights and measures.
- The use of this equipment has great potential to facilitate package testing for many viscous and non-viscous liquids, as well as other weights and measures inspection areas. OWM will continue to assist the L&R Committee and the weights and measures community as it works to support the use of this equipment in official inspections.
- Like any standards or test equipment such as test weights, volumetric standards, temperature sensing devices that will be used in regulatory action, it is essential for a weights and measures jurisdiction to validate the traceability of measurements made using the equipment. Results must be "beyond a

OWM Executive Summary for Section 3.1.1 Test Methods and 3.X. Gravimetric Test Procedure for Viscous and Non-Viscous Liquids by Portable Digital Density Meter.

reasonable doubt." It is OWM's opinion this has not been met. Very limited testing has been conducted by the submitter.

- Not all portable digital density meters are suitable for use using the proposed test procedure. Criteria must be developed to determine if a portable digital density meter is suitable.
- Another concern is the limited testing analysis provided by the submitter comparing the digital density meter to the current NIST Handbook 133 volumetric test procedure. Data on only five products were submitted which is insufficient to statistically validate results to ensure the test procedure will be defensible for use in official inspections.
- At the 2022 Interim, the Committee removed the Table 2. Density Coefficient Factors (Alpha) due to the factors not being validated. The Alpha correction must now be calculated manually using the formula provided in the test procedure. OWM believes adding this table back into the test procedure, with validated correction factors would benefit officials by eliminating manual calculations and simplifying the test procedure.
- Many questions need to still be answered such as the level of accuracy required based on study, calibration methods including certified reference materials, use of correction factors and how they affect the measurement, limitations of the devices use, the number and type of samples that should be tested in order to validate results as compared to current NIST HB 133 procedures, and proper procedures for validating a device.

Table 3. Summary of Recommendations

NET-22.2 – Section 3.1.1 Test Methods and 3.X. Gravimetric Test Procedure for Viscous and Non-Viscous Liquids by Portable Digital Density Meter.

	V	D	W	A	I	Note*	Comments
Submitter	✓						
OWM		✓		✓			
CWMA	✓						
WWMA				✓			
SWMA				✓			
NEWMA				✓			
NCWM							

***Notes Key:**
1 – Submitted modified language
2 – Item not discussed
3 – No meeting held
4 – Not submitted on agenda
5 – No recommendation or not considered

Item Under Consideration:

Amend NIST Handbook 133, Checking the Net Contents of Packaged Goods, to modify Note 2 in Section 3.1.1. Test Methods and Section 3.X. Gravimetric Test Procedure for Viscous and Non-Viscous Liquids by Portable Digital Density Meter. Add a compliance test procedure for 3.X. Gravimetric Test Procedure for Viscous and Non-Viscous Liquids by Portable Density Meter as follows:

3.1. Scope

3.1.1. Test Methods

Notes:

…

(2) When checking liquid products using a volumetric or gravimetric procedure for **density determination**, the temperature of the samples must be maintained at the reference temperature ± 2 °C (± 5 °F), **except when using Section 3.X. Gravimetric Test Procedure for Viscous and Non-Viscous Liquids by Portable Digital Density Meter, where a correction factor is used to correct the density to the reference temperature.**

3.X. Gravimetric Test Procedure for Viscous and Non-Viscous Liquids by Portable Digital Density Meter

Use the following procedure for packages labeled in fluid volume.

Most portable digital density meters are suitable for measuring the density of homogenous liquids free of suspended gas, air, sediment, and suspended matter. Portable digital density meters should not be used for products such as orange juice with pulp, buttermilk, liquids requiring "shake before use", paint, carbonated products such as soda and beer, or substances not approved by the digital density meter manufacturer.

The suitability of a given meter for use with specific product types is determined based upon the specifications of the manufacturer, the intended application, and verification by a recognized laboratory.

A portable digital density meter must meet the following criteria unless otherwise noted:

- **Influence of viscosity on density result is automatically corrected for highly viscous samples.**
- **RFID function for reading RFID tags for a quicker assignment of methods and for expanding the number of methods available to the inspector.**
- **Built-in data storage for storing test results.**
- **Printing capabilities to print test results is desirable but not required.**
- **Resolution of four decimal places with an accuracy to 0.001 g/cm^3. Instrument has a measurement mode setting set to the most "accurate" mode (e.g., precise mode) as defined by the manufacturer.**

NOTE: Typically, portable digital density meters manufactured after 2??? meet this criteria, but user of the instruments should verify with the manufacturer.

The portable digital density meter shall be verified and approved in accordance with the manufacturers and other recognized calibration procedures before being put into service. The portable digital density meter must only be used in a manner for which it was designed and calibrated. This device must be routinely recertified according to your agency's measurement assurance policies. Refer to NIST HB 130 Section 11 (h) of Weights and Measures Law and NIST HB 133 Chapter 1, Section 1.7. Good Measurement Practices for additional guidance.

Verify the accuracy (calibration) of the portable digital density meters before each initial daily use, before each use at new location, or when there is any indication of abnormal equipment performance (e.g., erratic indications). Recheck the portable digital density meter accuracy (calibration) if it is found that the sample does not pass, to confirm that the test equipment is not at fault".

Users must consult with the manufacturers to ensure the brand and model automatically correct for viscosity for viscosities greater than 100 mPa·s. Viscosities less than 100 mPa·s do not require a viscosity correction.

This test procedure may be used as an alternative test procedure for the following Sections:

- **Section 3.2. Gravimetric Test Procedure for Non-Viscous Liquids.**
- **Section 3.3. Volumetric Test Procedure for Non-Viscous Liquids.**
- **Section 3.4. Volumetric Test Procedures for Viscous Fluids – Headspace.**

Note: Portable Digital Density Meters can also be used as a timesaver for screening products for product quality and product identification.

3.X.1. Test Equipment

- **A scale that meets the requirements in Chapter 2, Section 2.2. "Measurement Standards and Test Equipment."**
- **Note: To verify that the scale has adequate resolution for use, it is first necessary to determine the density of the liquid; next verify that the scale division is no larger than MAV/6 for the package size under test. The smallest graduation on the scale must not exceed the weight value for MAV/6.**

  Example:

  Assume the inspector is using a scale with 1 g (0.002 lb) increments to test packages labeled 1 L (33.8 fl oz) that have an MAV of 29 mL (1 fl oz). Also, assume the inspector finds that the weight of 1 L of the liquid is 943 g (2.078 lb).

  Density: *1 L = 943 g (2.078 lb)*

  MAV: *29 mL (1 fl oz)*

- ***Convert the Density into mL and Fl oz:***

  943 g ÷ 1000 mL= 0.943 g/mL (digital density meter measurement can be used for this step i.e. 0.943 g/cm³)

  (2.07 8 lb ÷ 33.8 Fl oz = 0.061 4 lb/fl oz)

- ***Convert MAV from Volume (mL/fl oz) to Weight:***

  29 mL × 0.943 g/mL = 27.347 g
  (1 Fl oz × 0.061 4 lb/fl oz = 0.064 lb)

  MAV in Weight/6: ***27.347 g ÷ 6 = 4.557 g 0.064 lb ÷ 6 = 0.010 lb***

  In this example, the 1 g (0.002 lb) scale division is smaller than the MAV/6 value of 4.557 g (0.010 lb) so the scale is suitable for making a density determination.

- **Low pressure air pump (small) – (e.g., an aquarium air pump)**
- **Syringe (glass or plastic with a Luer fitting 5 mL or larger). The syringe should be free of any lubricating substances)**
- **Distilled or deionized water**
- **Cleaning agents (See Table 3.4. Cleaning Agents)**
- **Waste container**
- **Barometer for obtaining the prevailing barometric pressure, with an accuracy of ± 3.0 mmHg**
- **Thermometer for measuring air temperature with a tolerance of ± 1 °C (2 °F)**
- **Portable digital density meter meeting a minimum requirement of:**

Measuring Range	
Density	**0 – 3 g/cm³**
Temperature	**0 – 40 °C (32 – 104 °F)[a]**
Viscosity	**0 – 1000 mPa·s**
Accuracy[b]	
Density	**0.001 g/cm³**
Temperature	**0.2 °C (0.4 °F)**
Repeatability s.d.	
Density	**0.0005 g/cm³**
Temperature	**0.1 °C (0.1 °F)**

Resolution	
Density	**0.0001 g/cm^3**
Temperature	**0.1 °C (0.1 °F)**
Sample Volume	**2 mL**
Sample Temperature	**max. 100 °C (212 °F)**
Footnotes **[a.] Filling at higher temperatures possible.** **[b.] Viscosity < 100 mPa·s, density < g/cm^3**	

3.X.2. Test Procedure

1. **Follow Section 2.3.1. "Define the Inspection Lot." Use a "Category A" sampling plan in the inspection. Select a random sample**

2. **Bring the packages and their contents to a temperature, between the reference and ambient temperatures**

   Note: Some packages (e.g., flavored milk) may need to be gently rolled to mix the contents. Avoid shaking liquids, since shaking some products to mix them will entrap air that will affect density measurements.

3. **The portable digital density meter must be near ambient temperature and above the dew point of the ambient air to avoid causing condensation within the unit. Condensation must be avoided and could cause the digital density meter to malfunction and cause potential damage.**

4. **Using distilled or deionized water or other reference standard(s), validate the digital density meter per the manufacturer's calibration instructions. The portable digital density meter shall be validated to verify the accuracy (calibration) of the portable density meter before each initial daily use, before each use at new location, or when there is any indication of abnormal equipment performance (e.g., erratic indications). Recheck the portable density meter accuracy (calibration) if it is found that the sample does not pass, to confirm that the test equipment is not at fault. The digital density meter shall be calibrated using a standard sample, within an allowable density range of ± 0.0005 g/cm^3.**

5. **Select the first two random sample packages selected from the lot for density determination.**

6. **Ensure the portable digital density meter is clean prior to testing. Any residual liquid should be drained, and the unit should be flushed with a small amount of the sample to be tested. Flush and discard the sample two times before taking a measurement.**

7. **To test the first package of the sample, follow the manufacturer's instructions to select the correct method, when using a meter with built in correction factors, and measure the density of the sample using a syringe or the built-in pump. Fill the specimen of the sample**

slowly and gently. If gas or air bubbles are present drain sample and refill. If the correction factor is not known, refer to Step 9.

Note: Instruments have built in stored correction factors for many products or see Table X.2. Density Coefficient Factor (Alpha)

Note: Use of a syringe may be desirable to allow sample specimen to achieve ambient temperature prior to introduction of specimen into testing cell and for viscous specimens.

8. **Once the temperature reading on the portable digital density meter has stabilized (maintained reading ± 0.2 °C (± 0.5 °F) for 10 seconds), record density and temperature as indicated on instrument. Instruments have a measurement mode setting that shall be set in the most "accurate" mode (e.g., precise mode) as defined by the manufacturer.**

9. **Apply the density coefficient of expansion (Alpha) also known as the density correction factor, to correct to the reference temperature. See Table X.2. Density Coefficient Factor (Alpha). If the Alpha correction is not known, then the factor can be calculated using the below formula.**

   After this correction, this value is the density of the substance in the vacuum at the prescribed reference temperature. Calculating the Temperature Coefficient Alpha as used in Anton Paar instruments. See other instrument manuals for their alpha values and method of calculating alpha values for their specific instruments.

   Temperature coefficient Alpha $= \left| \frac{\rho^1 - \rho_2}{T^1 - T_2} \right|$

   ρ_1 …. density at temperature T_1

   ρ_2 …. density at temperature T_2

   T_1 …. temperature at initial measurement

   T_2 …. temperature at second measurement

   Notes:

   - **If the density correction factor is not known but the volume correction factor is known, the density correction factor can be calculated from the volume correction (VCF) factor using the following formula.**
   - **Density Temperature Factor Alpha = Absolute Value of VCF × Density.**

   Note: Influence of viscosity on density result will be automatically corrected by the portable digital density meter for highly viscous samples.

10. **Apply the apparent density correction by applying one of the following steps:**

    (a) multiplying the density by 0.999; or

    (b) multiplying the density by the Apparent Mass Factor from Table X.4.; or

(c) calculate apparent density by using the following:

Converting True Density into Apparent Density

The apparent density is defined as:

$$Paap = \frac{Ptrue,sample - Pair}{1 - \frac{Pair}{8.0\ g/cm3}}$$

Where:

Paap = apparent density of the sample

Psteel = 8.0 g/cm3

Pair = true density of air

Ptrue,sample = true density of the sample

The apparent density is smaller than the true density and can be calculated from the true density considering the buoyancy of the sample in air and the weight and density of a reference weight in steel.

***Pair = true density of air as calculated from equation in Table X.1. Density Measurement.**

After application of this factor or calculation, the new value is density of the substance in air.

11. Drain the instrument and repeat Steps 7–10 on a second specimen of the same package for verification of first measurement.

12. Note: It is not necessary to fully clean the cell between measurements for the second specimen of the same sample. Simply flush the cell using the same sample at least two times before taking your second measurement. Compare the two specimen readings, they must agree within 0.0003 g/cm^3. Calculate the average density of the two specimens from the sample. If the difference of two readings is greater than 0.0003 g/cm^3, discard results and repeat testing of sample. Air or undissolved gas will cause erroneous measurement errors. The user of the shall always visually inspect for undissolved gas in the measurement tube for a valid test.

13. Drain the instrument and repeat testing for the second (or subsequent) package of the sample, repeating Steps 6–12.

14. Calculate the Average Product Density of sample 1 and 2. The two results must agree within 0.0005 g/cm^3. If the difference between the densities of the two packages exceeds 0.0005 g/cm^3, use the volumetric procedure in Section 3.3. "Volumetric Test Procedure for Non-Viscous Liquids", or you may continue the testing of all the subsequent sample packages selected from the lot using Steps 6-13.

15. Determine the Average Used Dry Tare Weight of the sample according to provisions of Section 2.3.5. "Procedures for Determining Tare."

16. Calculate the "nominal gross weight" using the following formula:

Nominal Gross Weight = (Average Product Density [in weight units]) × (Labeled Volume) + (Average Used Dry Tare Weight)

17. Weigh the remaining packages in the sample.

18. Subtract the nominal gross weight from the gross weight of each package to obtain package errors in terms of weight. All sample packages are compared to the nominal gross weight.

19. To convert the average error or package error from weight to volume, use the following formula:

Package Error in Volume = Package Error in Weight ÷ Average Product Density Per Volume Unit of Measure

3.X.3. Evaluation of Results

Follow the procedures in Chapter 2, Section 2.3.7. "Evaluate for Compliance" to determine lot conformance.

3.X.4. Cleaning and Storage of Digital Density Meter

Anytime the portable digital density meter is used to test a different commodity, or if the digital density meter use is done for the day and going to be stored after final use, the instrument shall be drained and cleaned following the manufacturer's recommended cleaning procedures and using two cleaning agents. The first cleaning agent removes sample residue, and the second cleaning agent removes the first cleaning agent. See Table X.5. Cleaning Agents for examples of cleaning agents recommended by a digital density meter manufacturer.

NOTE: If the unit will be immediately used to measure another sample of similar composition (e.g., milk with different fat contents, different viscosity oils), the unit may be drained and flushed with the new sample three times before the next analysis.

If the density meter is not going to be used within 2 days, it is recommended that the measuring cell be dried using an external low-pressure air source. Bypassing the internal pump may be necessary to dry the measuring cell. After a thorough cleaning, connect the portable digital density meter to a low-pressure air source, (e.g., aquarium air pump) to dry the unit's measurement cell. This will ensure no buildup of deposits in the measuring cell and no long-term drift of the instrument calibration. To determine if the measuring cell is "dry", the density will display an air value of 0.0012 g/cm$^{3.}$ See Table X.1. Air Density Calculation. If this value is not achieved, additional cleaning may be necessary.

NOTE: The digital density meter must be properly stored to avoid the possibility of any water residue within the measuring cell from freezing.

Table X.1.
Air Density Calculation

Calculate the density of air at the temperature of test using the following equation

ρ_{air}, g/mL = 0.001293[273.15/T][P/760]

Where:

T = temperature, K, and

P = barometric pressure, torr.

°C	mmHg	d_{air}, g/mL
15.56	760	0.001223314

Table X.2.
Density Coefficient Factor (Alpha)

Notice: This Table is currently under development. Missing data will be added after additional research and validation is completed. (Rev 11/15/2022)

Note: Do not use these alpha values if they are outside the accepted temperature range as shown.

Product	alpha(α1)/°C |(p1-p2)/(T1-T2)|	alpha(α2)/°C (d2/d1-1)/(T1-T2)	Temperature Range	Typical Density at ref temp, g/cm^3	Source of derived information	Reference Temperature, °C
Petroleum Products use α1 (AntonPaar) or α2 (MettlerToledo) for specific instrument						
n-Heptane						15.56
Iso-Octane	0.00085	0.001243	10 - 30°C		NBS SRM 2213	15.56
n-Pentane						15.56
Toluene	0.00092	0.00107	10 - 30°C	0.8710	ASTM D1555	15.56
o-Xylene	0.00082	0.00094	10 - 30°C	0.8834	ASTM D1555	15.56
m-Xylene	0.00084	0.00098	10 - 30°C	0.8678	ASTM D1555	15.56
p-Xylene	0.00086	0.00101	10 - 30°C	0.8646	ASTM D1555	15.56
mixed Xylenes	0.00084	0.00098	10 - 30°C		ASTM D1555	

Table X.2.
Density Coefficient Factor (Alpha)

Notice: This Table is currently under development. Missing data will be added after additional research and validation is completed. (Rev 11/15/2022)

Note: Do not use these alpha values if they are outside the accepted temperature range as shown.

Product	alpha(α1)/°C |(p1-p2)/(T1-T2)|	alpha(α2)/°C (d2/d1-1)/(T1-T2)	Temperature Range	Typical Density at ref temp, g/cm^3	Source of derived information	Reference Temperature, °C
Generalized Petroleum Products (ASTM D1250) Footnote [1]						
Automatic Transmission Fluid	API Density D	API Density D	4 - 44°C	-	ASTM/API/IP	15.56
Camp Fuel, White Gas	API Density B	API Density B	4 - 44°C	-	ASTM/API/IP	15.56
Diesel, heating oil	API Density B	API Density B	4 - 44°C	0.81 - 1.08	ASTM/API/IP	15.56
Engine Oil	API Density D	API Density D	4 - 44°C	-	ASTM/API/IP	15.56
Gasoline	API Density B	API Density B	4 - 44°C	0.65- 0.78	ASTM/API/IP	15.56
Kerosene, jet fuel	API Density B	API Density B	4 - 44°C	0.79 - 0.84	ASTM/API/IP	15.56
Mineral oil	API Density D	API Density D	4 - 44°C	-	ASTM/API/IP	15.56
Paint Thinner	API Density B	API Density B	4 - 44°C	-	ASTM/API/IP	15.56
Petroleum Ether	API Density B	API Density B	4 - 44°C	-	ASTM/API/IP	15.56
-	-	-	-	-	-	-
Other Liquids and Wine (use α1 (AntonPaar) or α2 (MettlerToledo) for specific instrument						
Acetic acid	-	-	-	-	-	20
Acetone	-	-	-	-	-	20
Alcohol, ethyl (ethanol) 100%	0.00086	0.00109	0 - 40°	0.79304	Measurement Canada	15.556
Alcohol, methyl	-	-	-	-	-	20
Ammonia	-	-	-	-	-	20

Table X.2.
Density Coefficient Factor (Alpha)

Notice: This Table is currently under development. Missing data will be added after additional research and validation is completed. (Rev 11/15/2022)

Note: Do not use these alpha values if they are outside the accepted temperature range as shown.

Product	alpha(α1)/°C |(p1-p2)/(T1-T2)|	alpha(α2)/°C (d2/d1-1)/(T1-T2)	Temperature Range	Typical Density at ref temp, g/cm^3	Source of derived information	Reference Temperature, °C
Aniline	-	-	-	-	-	20
Antifreeze 50/50 (ethylene glycol)	-	-	-	-	-	20
Diesel Exhaust Fluid	-	-	-	1.0870 - 1.0930	ISO 22241	20
Distilled Spirits	-	-	-	-	-	15.56
Ether	-	-	-	-	-	20
Ethyl acetate	-	-	-	-	-	20
Ethylene glycol	-	-	-	-	-	20
Glycerin (glycerol)	-	-	-	-	-	20
Isobutyl alcohol	-	-	-	-	-	20
Iso-propanol (70%)	-	-	-	-	-	20
Iso-propanol (91%)	-	-	-	-	-	20
Iso-propanol Anhydrous (100%)	0.00083	0.00107	5 -30 °C	0.7850	-	20
Methyl Ethyl Ethyl Ketone	-	-	-	-	-	20
Olive oil	-	-	-	-	-	20
Sulfuric acid,	-	-	-	-	-	20

Table X.2.
Density Coefficient Factor (Alpha)

Notice: This Table is currently under development. Missing data will be added after additional research and validation is completed. (Rev 11/15/2022)

Note: Do not use these alpha values if they are outside the accepted temperature range as shown.

Product	alpha(α1)/°C |(p1-p2)/(T1-T2)|	alpha(α2)/°C (d2/d1-1)/(T1-T2)	Temperature Range	Typical Density at ref temp, g/cm^3	Source of derived information	Reference Temperature, °C
concentrated						
Turpentine	-	-	-	-	-	20
Water	0.00021	0.00021	-	0.9982	NIST.IR.6969-2018 Table 9.10	20

Dairy Products (use α1 (AntonPaar) or α2 (Mettler Toledo) for specific instrument

Dairy Products	alpha(α1)/°C |(p1-p2)/(T1-T2)|	alpha(α2)/°C (d2/d1-1)/(T1-T2)	Temperature Range	Typical Density at 4°C	Source of derived information	Reference Temperature, °C
Homogenized milk	0.00025	-	4 - 20 °C	1.033	Footnote [2]	4.4
Milk, 2%	0.00022	-	4 - 20 °C	1.034	Footnote [2]	4.4
Skim milk	0.00019	-	4 - 20 °C	1.036	Footnote [2]	4.4
Fortified skim	0.00019	-	4 - 20 °C	1.041	Footnote [2]	4.4
Half and half	0.00044	-	4 - 20 °C	1.027	Footnote [2]	4.4
Half and half, fort.	0.00044	-	4 - 20 °C	1.031	Footnote [2]	4.4
Light cream	0.00056	-	4 - 20 °C	1.021	Footnote [2]	4.4
Heavy cream	0.00088	-	4 - 20 °C	1.008	Footnote [2]	4.4

Footnotes:

1. **Instrument with built in tables for Generalized Petroleum Products (ASTM D1250)**
2. **Goff, H.D., Hill A.R. "Dairy Chemistry and Physics", University of Guelph**
3. **Alpha (α1) values are used in Anton Paar Instruments**

Table X.2.
Density Coefficient Factor (Alpha)

Notice: This Table is currently under development. Missing data will be added after additional research and validation is completed. (Rev 11/15/2022)

Note: Do not use these alpha values if they are outside the accepted temperature range as shown.

Product	alpha(α1)/°C |(p1-p2)/(T1-T2)|	alpha(α2)/°C (d2/d1-1)/(T1-T2)	Temperature Range	Typical Density at ref temp, g/cm^3	Source of derived information	Reference Temperature, °C
4. Alpha (α2) values are used in Mettler Toledo Instruments						

Table X.3.
Viscosity Corrections of Common Materials

Note: Values for Viscosity and Corrections are published in XXXX.

Material	Viscosity in Centipoise (at 20° C)	Correction g/cc
Water	1 cP	
Milk	3 cP	
Castrol Oil	1,000 cP	0.0008
Karo Syrup	5,000 cP	0.0008
Honey	10,000 cP	0.00085

Table X.4.
Apparent Mass Factor

Elevation, ft	sea level	1500	3000	4500	6000
Barometer, mmHg	760	720	680	640	600
density, g/cc	Apparent Mass Factor				
0.500	0.9977	0.9979	0.9980	0.9981	0.9982
0.600	0.9981	0.9982	0.9983	0.9984	0.9985
0.700	0.9984	0.9985	0.9986	0.9987	0.9988
0.800	0.9986	0.9987	0.9988	0.9989	0.9989
0.900	0.9988	0.9989	0.9989	0.9990	0.9991

Table X.4. Apparent Mass Factor					
1.000	0.9989	0.9990	0.9991	0.9991	0.9992
1.100	0.9991	0.9991	0.9992	0.9992	0.9993
1.200	0.9991	0.9992	0.9992	0.9993	0.9993
1.300	0.9992	0.9993	0.9993	0.9993	0.9994
1.400	0.9993	0.9993	0.9994	0.9994	0.9994
1.500	0.9993	0.9994	0.9994	0.9994	0.9995
Elevation or prevailing barometric pressure at the location of measurement.					

Table X.5.
Cleaning Agents

(Examples of cleaning agents recommended by digital density meter manufacturers. Verify the proper cleaning agent for the digital density meter used based on manufacturers recommendation.)

Commodity	Cleaning Liquid 1	Cleaning Liquid 2
Petroleum products	Toluene, petroleum naphtha, petroleum ether, n-nonane, cyclohexane	Ethanol
Battery acid	Tap water	Ultra-pure (bi-distilled or deionized) water
Liquid soap and detergent, shampoo	Tap water	Ultra-pure (bi-distilled or deionized) water
Salad dressing, mayonnaise	Petroleum naphtha, dish washing agent in water	Ethanol
Suntan lotion	Tap water	Ethanol
Spirits	Tap water	Ultra-pure (bi-distilled or deionized) water
Grape juice, syrup	Warm tap water	Ultra-pure (bi-distilled or deionized) water
Milk*	Tap water, enzymatic lab cleaner	Ultra-pure (bi-distilled or deionized) water

***NOTE: Do not introduce ethanol or other alcohols into instrument without first flushing all milk products from instruments.**

NIST OWM Detailed Technical Analysis:

Portable Digital Density Meters are in widespread use in the verification of the net quantity of contents by legal metrology programs in other countries to test a wide range of liquids including chemicals and oils.

These devices are also widely used in industry laboratories and their performance with many viscous and non-viscous products is proven.

OWM agrees with the submitter that these devices may be used in audit testing and screening of packaged commodities for accurate quantity determinations. Inspectors should use the current procedures in NIST HB133 for enforcement purposes. This practice should continue until studies provide sufficient evidence that these devices can provide density values equivalent to those measured found using existing test methods.

OWM encourages that inspectors considering the use of these devices in determining product density to follow the guidance provided in Section 3.X. Scope to have these devices compared to current test procedures in a calibration laboratory. If that is not practical, it is important that inspectors using these devices in the field, also determine the product density using NIST HB133 Chapter 3. "Test Procedures – For Packages Labeled by Volume." An inspector should perform several comparisons of two density values to ensure they are identical before using any value from a density meter to take enforcement action on packaged goods.

OWM also encourages users to share their test-method comparison data with the Committee and/or Task Group if formed so that it can be collected and analyzed as part of the national process for recognizing these devices for use in a future edition of NIST HB133.

The use of this equipment has great potential to facilitate testing in package checking as well as other weights and measures inspection areas. OWM looks forward to assisting the L&R Committee and the weights and measures community as it works to support the use of this equipment in official inspections.

As the Committee is aware, the current Item Under Consideration was completed and provided to the Committee by the submitter one day before the 2022 NCWM Interim started. OWM and others need additional time to adequately consider the most recent version of the proposal and to continue assessing technical gaps previously identified. OWM lab metrology staff is assisting the OWM L&R Advisors with a review of this proposal and OWM will be providing additional technical feedback to assist the Committee in assessing this proposal.

Since the 2022 NCWM Annual Meeting, OWM has been working with the submitter, Mr. Hayes in addressing the numerous comments NIST OWM had submitted. As a result, the submitter has made a several significant updates to the current item under. Even with these changes, OWM believes additional review and development is needed by all stakeholders, including other outstanding and new comments and concerns that OWM has outlined.

Even with the recently submitted changes, OWM believes additional work is required. Some of the changes included:

- Adding criteria for selection of a suitable portable digital density meter.
- Adding back in a table with "Density Coefficient Factors" with verified values.
- Verifying the accuracy of all values and citing the sources of this verification within the procedure
- Adding graphics (pictures) to provide clarification.

- OWM has engaged it metrology group to assist with the ongoing review and provide expertise on how to best validate the accuracy and performance of the meter, and to review the test procedure for clarity, usability, and reliability. OWM is looking into obtaining a portable digital density meter so we can have on hands experience which will provide even more insight.

- It is unusual for a new technical and detailed procedure, to have no comments been heard from membership regarding edits, changes, questions, or comments about the proposal. We encourage the membership to perform a critical review of the test procedure as it will have a significant impact in W&M.

- Like any standards or test equipment such as test weights, volumetric standards, temperature sensing devices that will be used in regulatory action, it is essential for a weights and measures jurisdiction to validate the traceability of measurements made using the equipment. Results must be "beyond a reasonable doubt." It is OWM's opinion this has not been met. Limited testing has been conducted by the submitter.

  The data provided thus far looks promising but is insufficient to ensure it will be defensible for use in official inspections. Data is insufficient in *quantity* to be statistically significant. Data collected is limited in *scope*. It does not address the range of proposed product types and applications.

- A wide variety of density meters with variable applications and accuracies are available. The cost of a Portable Digital Density Meter is approximately $3000 – $4000. Costs vary according to specific safety, security, and accuracy issues that must be met.

- OWM recommends the L&R Committee consider the following actions.

  - ***Refine the Proposed Language.*** Additional modifications are needed to the proposal in specific areas to better define use.

- ***Establish a Task Group under the L&R Committee.*** Assign this group the responsibility of collecting data to validate the use of density meters for specific product types and categories. Additional tasks might include the following:

  - Prioritize the product types and categories of highest interest to regulators and industry for validation.

  - Clearly define the uncertainty and an allowable difference or tolerance between the digital density meter and the current NIST HB 133.

  - Define the lower limits on density (example: > 0.5 g/cm^3 to 2 g/cm^3) defined. Under the current proposal scenarios can occur where mathematically calculated volume values will not be sufficiently accurate.

  - Products of higher viscosities are a concern. "Viscous" needs to be clearly defined (with a value).

  - Criteria for determining an appropriate density meter (like range and minimum resolution) needs to be defined.

  - Reference material of known (liquid) quantities needs to be better conveyed in the procedure.

- Clear guidance needs to be provided regarding the limitations of these devices, particularly with regard to their use in audit testing vs. enforcement action.

- "Critical steps" needed to avoid enforcement errors need to be identified and clearly communicated.

- The source of alpha values needs to be verified and cited in the procedure. An analysis of the likely uncertainty of locally calculated alpha values must be completed to verify impact on final calculated volumes.

- Correction factors used with equipment need to be validated and means for security provided.

- The current language/procedure needs to be improved for cleaning the device between uses; a critical step that will affect results if not properly done and could vary by manufacturer.

- The use and limitations of an air pump needs to be qualified.

- ***Develop Guidance Documents.***

  - ***High-Level Steps for Validating Test Equipment.***

- NIST OWM can provide guidance and prioritization on key steps needed to validate such test equipment.

- Such guidelines can be used by individual Directors, work groups, or industry to conduct data collection and analysis to validate specific equipment and product types.

- ***NIST Field Manual.*** Determine the need for a NIST Field Manual to support and facilitate the use of Digital Density Meters for official inspections and testing.

OWM recommends that the Committee avoid the practice of allowing measuring sensors or unverified applications on state or inspector owned smartphones in testing and enforcement actions. Any measuring device involved the verification of the net quantity of contents of packaged goods should be evaluated for suitability and tested and calibrated by the state's metrology laboratory (or an accredited 3rd party testing laboratory.) There are other concerns as well but, if the inspector can obtain the current local barometric pressure as shown on the National Weather Service website at **National Weather Service** (NWS), which provides local weather conditions including barometric pressure by zip code search, that should be a more reliable and defensible resource than an unverified smartphone application that may have been dropped and damaged. If the Committee finds the NWS website does not provide the needed pressure reading within the required accuracy, then OWM recommends that the procedure be modified to require the inspector have a certified barometer available for use during the inspection. Removing reference to use of barometer was agreed upon by the submitter and removed.

Another important question is if the manufacturers provide adequate means for ensuring the accuracy and traceability of the built-in thermometers. This is because accurate temperature determinations are especially critical in making density determinations using a 2 mL sample. Detailed guidance on taking samples is also needed to assure accuracy. It is important that the sample be collected from the package using good measurement practice and that once collected it be measured promptly to ensure that the temperature does not vary outside of the prescribed range.

OWM joins with the submitter in highlighting the limitations of the types of liquids that can be tested using these devices. The submitter provided the following in Section 3.X. Scope:

This test procedure is suitable for measuring the density of homogenous liquids including dairy products such as milk and half & half; petroleum products such as fuel, motor oil, transmission fluid, paint thinner, brake fluid, diesel exhaust fluid, automotive coolant; pulp-free juices, wine, distilled spirits, water, mouth wash, alcohol, syrups, cooking oils, solvents, cleaning supplies, chemicals, as well as other viscous and non-viscous liquids. All products tested shall be free of suspended gas, air, sediment, suspended matter.

This was confirmed in testing that OWM had previously performed, it which recognized that most devices would not provide acceptable results if, the liquid had entrained air, the product was carbonated, or if it contained solids (e.g., flavored milks or juices, especially where shaking is recommended to mix the solids). Manufacturer's instructions should be reviewed to determine if the meter under consideration is suitable for testing the products that the official intends to examine. Today's meters will likely provide more accurate determinations of density over a wider range of products, but OWM recommends their performance be verified against NIST HB133 method to ensure both accuracy and repeatability. OWM also recommends that if these devices are to be evaluated comparisons should start with testing various products including viscous products listed in the proposal. Portable Digital Density meters could be accepted where their availability may provide the greatest return on the investment. OWM recommends anyone using these meters for use in package control read Guide 14 "Density Measurement" published in 2011 by the Organization of International Legal Metrology (OIML) (**https://www.oiml.org/en/files/pdf_g/g014-e11.pdf**).

The submitter of this proposal had a Table X.1 "Viscosity Corrections of Common Materials". What is the source of these values and what uncertainties are associated with the values?

In a separate comment the submitter reports that the "Current method in Section 3.4 Volumetric Test Procedures for Viscous Fluids – Headspace" does not work for oblong plastic bottles often used for motor oil." OWM was either not aware of this issue or overlooked this statement in previous submittal of this proposal that came before the L&R Committee. OWM encourages the Committee to request that the submitter provide information, pictures, and test data on this issue to allow the Committee and OWM to investigate this type of problem. When OWM was developing training courses on package control several oblong paint containers were tested using the headspace methods in NIST HB133 and those tests worked well and provided good test results. OWM does not dispute the submitter's statement but wishes to express the belief it merits further inquiry. Perhaps some amendments to the current headspace test methods can be made to make them more appropriate for use with oblong motor oil containers. OWM believes this effort will be justified because many jurisdictions will likely not purchase digital density meters for their inspectors due to their cost. Ensuring the existing test procedures are valid for use with different package designs and containers is essential.

Viscous and Non-Viscous Liquids

OWM encourages the Committee to solicit comments and suggestions to provide clearer terms and examples to identify product types which fall under the classification of a viscous and non-viscous liquid. Packaging and labeling regulations typically require that viscous liquids (such as ketchup, mustard) be sold by net weight not fluid measure so devices may have a narrower range of application in testing of packages typically inspected by weights and measures. The question of whether a product is viscous is a frequent question that we address in packaging and labeling inquiries. Over the years OWM has also received several requests from the food industry for help in better defining the range of products that fall under the definitions. Such an effort would help inspectors and packers alike. It would certainly help others to see the types of products that these instruments may be most suitable for use in testing. If the terms were better

defined or a listing of typical products were provided to illustrate a consensus opinion on these categories, it could be added to the Interpretations and Guidelines Sections of NIST Handbook 130 and become a valuable reference in the future by ensuring the same product is labeled by the same units of measure for all manufacturers.

Demonstration before the NCWM Laws and Regulations Committee
After a test procedure has been fully develop, the Committee may want to initiate a practice of having submitters demonstrate the complete procedure (step by step) before the Committee (either in-person or video). This would allow for the procedure to be evaluated and better understood. OWM has found that several of the procedures adopted into NIST Handbook 133 at times omitted steps in the package inspection process, while others included specifications for test equipment that had to be fabricated. OWM also found there may not have been a design specification or drawings available for utilization by the states for ordering the equipment. In addition, we recommend that submitters refrain from creating active software spreadsheets. Some inspectors may not have the software, knowledge in using it, or availability of a computer at an inspection site.

Below is a listing of recommended changes from OWM to the Item Under Consideration. OWM justifications for the changes can be found in outlined boxes below the change. In addition, OWM recommends that this proposal be Developing or Assigned to a Task Group.

General Comments from NIST OWM:

- Recommend adding a short explanation of turning density to volume, and the necessary conversion from density at measured temp (apparent density) to density at reference temp (true density then apparent density).
    - Without that short explanation, the reader, regardless that they're just following steps, will not understand that there are two temperatures (ambient and reference), two density terms (apparent and true), but only one volume result from the measurement.
- There are too many undefined terms, inconsistent term usage and unnecessary equations. Steps 7, 8, and 9 need to be reviewed.
- There should be some introductory statement on how this type of device works. An ordinary user who is not familiar with the scientific underpinning of the density meter will not appreciate the uncertainty introduced by temperature variation, and volumetric expansion, the need for calibration, or the magnitude of uncertainties contributed by factors such as temperature, viscosity, and barometric pressure. This doesn't need to be a long section, but it should preferably be in the document.
- There are mentions of correction factors in various sections and it is unclear what exactly those correction factors are, to a general reader, and how it affects measurements. This should be clarified.
- There may be a general reliance on the density meter's accuracy and that the manufacturers do their homework. That may well be, but a device is only as good as the user and if the user does not have an appreciation for how this device works, and the sources of error, then they can't make good judgements on whether their measurement practice is good or not. This should be reflected in the procedure.

- Consider having an Appendix showing where calculation of alpha and other values states in the Tables are derived and the source they come from.

Preamble under the Item Under Consideration:

Amend NIST Handbook 133, Checking the Net Contents of Packaged Goods, to modify Note 2 in Section 3.1.1. Test Methods and Section 3.X. Gravimetric Test Procedure for Viscous and Non-Viscous Liquids by Portable Digital Density Meter. Add a compliance test procedure for 3.X. Gravimetric Test Procedure for Viscous and Non-Viscous Liquids by Portable Density Meter as follows:

3.1. Scope

3.1.1. Test Methods

Notes:

…

(2) When checking liquid products using a volumetric or gravimetric procedure for **density determination**, the temperature of the samples must be maintained at the reference temperature ± 2 °C (± 5 °F), **except when using Section 3.X. Gravimetric Test Procedure for Viscous and Non-Viscous Liquids by Portable Digital Density Meter, where a correction factor is used to correct the density to the reference temperature.**

OWM believes additional data collection and analysis comparing the portable digital density meter results to current NIST HB133 test procedures for determining density is essential and would be best done by a Task Group. Based on that work, the TG can assess any limitations such as whether the procedure can be recommended for audit or compliance testing and whether there should be proposed restrictions on product types. OWM plans to provide guidance on the requirements for data collection. In addition, there is much benefit to be gained from having others who are not experienced (non-technical) review and provide feedback on the procedure's usability.

3.X. Gravimetric Test Procedure for Viscous and Non-Viscous Liquids by Portable Digital Density Meter

Use the following procedure for packages labeled in fluid volume.

Most portable digital density meters are suitable for measuring the density of homogenous liquids free of suspended gas, air, sediment, and suspended matter. Portable digital density meters should not be used for products such as orange juice with pulp, buttermilk, liquids requiring "shake before use", paint, carbonated products such as soda and beer, or substances not approved by the digital density meter manufacturer.

The suitability of a given meter for use with specific product types is determined based upon the specifications of the manufacturer, the intended application, and verification by a recognized laboratory.

A portable digital density meter must meet the following criteria unless otherwise noted:

- **Influence of viscosity on density result is automatically corrected for highly viscous samples.**

- **RFID function for reading RFID tags for a quicker assignment of methods and for expanding the number of methods available to the inspector.**

- **Built-in data storage for storing test results.**

- **Printing capabilities to print test results is desirable but not required.**

- **Resolution of 4 decimal places with an accuracy to 0.001 g/cm^3. Instrument has a measurement mode setting set to the most "accurate" mode (e.g., precise mode) as defined by the manufacturer.**

Note: Typically, portable digital density meters manufactured after 2??? meet this criteria, but user of the instruments should verify with the manufacturer.

The criteria need to be further reviewed and developed based on portable density meters in the marketplace. The capability to print test results stored in the instrument does not have to be a dedicated printer for the instrument. Bar Code reading technology is not required and RFID capability is sufficient. The NOTE above is unnecessary once criteria is established.

The portable digital density meter shall be verified and approved in accordance with the manufacturers and other recognized calibration procedures before being put into service. The portable digital density meter must only be used in a manner for which it was designed and calibrated. This device must be routinely recertified according to your agency's measurement assurance policies. Refer to NIST HB 130 Section 11 (h) of Weights and Measures Law and NIST HB 133 Chapter 1, Section 1.7. Good Measurement Practices for additional guidance.

Verify the accuracy (calibration) of the portable digital density meter before each initial daily use, before each use at new location, or when there is any indication of abnormal equipment performance (e.g., erratic indications). Recheck the portable digital density meter accuracy (calibration) if it is found that the sample does not pass, to confirm that the test equipment is not at fault".

Users must consult with the manufacturers to ensure the brand and model automatically correct for viscosity for viscosities greater than 100 mPa·s. Viscosities less than 100 mPa·s do not require a viscosity correction.

A previous OWM commented identified a concern that if viscous products are deemed suitable for use by the manufacturer, a maximum viscosity value needs to be defined and the viscosity of the product to be used with the density meter, the viscosity of the product must be verified. Currently the test procedure does not have steps for determining the viscosity of a product. It was recently learned that the current portable digital density meter technology appears to have a built-in automatic correction for viscosity. Research paper from Mettler Toledo, "Influence of sample viscosity on density measurements with the oscillating tube technique" **51710042 Proof (https://www.mt.com/dam/mt_ext_files/Editorial/Generic/3/UserCom_6_0x000248d200026358000406a7_files/51710088_usercom6e.pdf)** says you can avoid the viscosity when using portable digital density meter because the impact is insignificant (e.g., analogy of the borosilicate glass correction being insignificant when used in the volumetric test procedure). The newer portable digital density meter can

be used on any commodity regardless of viscosity because the unit automatically corrects for viscosity. OWM recommends the correction for viscosity needs to be further analyzed and assessed.

There should be a rationale as to why viscosity corrections are not needed, whether through literature references, estimations or through measurements. It is unclear how the portable digital density meters correct for viscosity since they appear to only be a toggle (on or off), and what this uncertainty contribution amounts to. This may require technical information from the portable digital density meter manufacturer.

OWM agrees that before being put into service, the official's metrology laboratory or recognized testing lab shall determine that "criteria" of the instrument is met. OWM recommends a checklist or SOP be developed to assist labs. It should be determined how often, and if necessary, a lab should perform a comparison between the densities of the portable digital density meter and the current NIST HB 133 test procedures to demonstrate repeatable, and reliable results.

The accuracy claim of 0.001 g/cm³ resulting from a 4 decimal place resolution will need to be proven with experimental data. This appears to be a standard reporting format by the manufacturer. The test lab should obtain calibration data from the manufacturer. Testing devices should have calibration data.

Who is responsible for verifying and approving the portable digital density meter prior to being put in service as stated in the above section? More details may be needed to explain how to verify accuracy prior to each daily use. Maybe point reader to section 3.x.2.4 later in this document.

This test procedure may be used as an alternative test procedure for the following Sections:

- **Section 3.2. Gravimetric Test Procedure for Non-Viscous Liquids.**
- **Section 3.3. Volumetric Test Procedure for Non-Viscous Liquids.**
- **Section 3.4. Volumetric Test Procedures for Viscous Fluids – Headspace.**

Note: Portable Digital Density Meters can also be used as a timesaver for screening products for product quality and product identification.

3.X.1. Test Equipment

- **A scale that meets the requirements in Chapter 2, Section 2.2. "Measurement Standards and Test Equipment."**
- **Note: To verify that the scale has adequate resolution for use, it is first necessary to determine the density of the liquid; next verify that the scale division is no larger than MAV/6 for the package size under test. The smallest graduation on the scale must not exceed the weight value for MAV/6.**

  Example:

  Assume the inspector is using a scale with 1 g (0.002 lb) increments to test packages labeled 1 L (33.8 fl oz) that have an MAV of 29 mL (1 fl oz). Also, assume the inspector finds that the weight of 1 L of the liquid is 943 g (2.078 lb).

  Density: ***1 L = 943 g (2.078 lb)***

MAV: ***29 mL (1 fl oz)***

- ***Convert the Density into mL and Fl oz:***

  943 g ÷ 1000 mL= 0.943 g/mL (digital density meter measurement can be used for this step i.e. 0.943 g/cm³)

  (2.07 8 lb ÷ 33.8 Fl oz = 0.061 4 lb/fl oz)

- ***Convert MAV from Volume (mL/fl oz) to Weight:***

  29 mL × 0.943 g/mL = 27.347 g
  (1 Fl oz × 0.061 4 lb/fl oz = 0.064 lb)

  MAV in Weight/6: ***27.347 g ÷ 6 = 4.557 g 0.064 lb ÷ 6 = 0.010 lb***

  In this example, the 1 g (0.002 lb) scale division is smaller than the MAV/6 value of 4.557 g (0.010 lb) so the scale is suitable for making a density determination.

- **Low pressure air pump (small) – (e.g., an aquarium air pump)**
- **Syringe (glass or plastic with a Luer fitting 5 mL or larger). The syringe should be free of any lubricating substances)**
- **Distilled or deionized water**
- **Cleaning agents (See Table 3.4. Cleaning Agents)**
- **Waste container**
- **Barometer for obtaining the prevailing barometric pressure, with an accuracy of ± 3.0 mmHg**
- **Thermometer for measuring air temperature with a tolerance of ± 1 °C (2 °F)**
- **Portable digital density meter meeting a minimum requirement of:**

Measuring Range	
Density	**0 – 3 g/cm³**
Temperature	**0 – 40 °C (32 – 104 °F)[a]**
Viscosity	**0 – 1000 mPa·s**
Accuracy[b]	
Density	**0.001 g/cm³**
Temperature	**0.2 °C (0.4 °F)**
Repeatability s.d.	

Density	**0.0005 g/cm^3**
Temperature	**0.1 °C (0.1 °F)**
Resolution	
Density	**0.0001 g/cm^3**
Temperature	**0.1 °C (0.1 °F)**
Sample Volume	**2 mL**
Sample Temperature	**max. 100 °C (212 °F)**
Footnotes **[a.] Filling at higher temperatures possible.** **[b.] Viscosity < 100 mPa·s, density < g/cm^3**	

3.X.2. Test Procedure

Consideration should be given to adding pictures or graphics to help the inspector to better understand.

1. **Follow Section 2.3.1. "Define the Inspection Lot." Use a "Category A" sampling plan in the inspection. Select a random sample**

2. **Bring the packages and their contents to a temperature, between the reference and ambient temperatures**

   Note: Some packages (e.g., flavored milk) may need to be gently rolled to mix the contents. Avoid shaking liquids, since shaking some products to mix them will entrap air that will affect density measurements.

3. **The portable digital density meter must be near ambient temperature and above the dew point of the ambient air to avoid causing condensation within the unit. Condensation must be avoided and could cause the digital density meter to malfunction and cause potential damage.**

Additional language is needed describing how to equilibrate the digital density meter to ambient temperature and how to determine when there is a temperature difference. This is already defined within the specification of the instrument which is capable of operating between 0 °C – 40 °C. This language though, reflects good lab practice, not a reflection of the instrument's capability.

4. **Using distilled or deionized water or other reference standard(s), validate the digital density meter per the manufacturer's calibration instructions. The portable digital density meter shall be validated to verify the accuracy (calibration) of the portable density meter before each initial daily use, before each use at new location, or when there is any indication of abnormal equipment performance (e.g., erratic indications). Recheck the portable density meter accuracy (calibration) if it is found that the sample does not pass, to confirm that the test equipment is not at fault. The digital density meter shall be calibrated using a standard sample, within an allowable density range of ± 0.0005 g/cm^3.**

OWM recommends using reference materials of known liquids to validate and calibrate the performance of the digital density meter with each product which the meter will be used to measure. This implies that only distilled or deionized water can or should be used. calibration should be done with calibration materials, whatever is available. For most this is simply pure or DI water. Using the test lab's own materials as calibration is not a true verification or quality control since materials are often impure. Alternatively, a test lab can install its own quality control material for density that is measured using a higher accuracy device, and the material has a stability testing record. For example, alcohols are volatile and alcohol-water mixtures can change proportions depending on storage (headspace, etc). this should be further reviewed and explored.

5. **Select the first two random sample packages selected from the lot for density determination.**

6. **Ensure the portable digital density meter is clean prior to testing. Any residual liquid should be drained, and the unit should be flushed with a small amount of the sample to be tested. Flush and discard the sample two times before taking a measurement.**

7. **To test the first package of the sample, follow the manufacturer's instructions to select the correct method, when using a meter with built in correction factors, and measure the density of the sample using a syringe or the built-in pump. Fill the specimen of the sample slowly and gently. If gas or air bubbles are present drain sample and refill. If the correction factor is not known, refer to Step 9.**

Note: Instruments have built in stored correction factors for many products or see Table X.2. Density Coefficient Factor (Alpha)

Alpha corrections factors vary by manufacture. This should be noted and addressed.

Most instruments have built in stored correction factors. Where are these built-in values coming from and how can we determine the accuracy? Should we require the official or metrologist to validate these values before using? OWM recommends that guidance and a step should be added on how to determine and verify the accuracy of any built-in stored values. This is critical in that these values will directly impact the measurement result. Correction factors used with the equipment need to be validated and means for security provided. Table X provides validated data. Should we require the official or metrologist to validate these values before using? To require the values to be validated for each meter is quite burdensome. All meter manufacturers should use a listing of common correction factors. Where are these built-in values coming from and how can we determine the accuracy?

It's not clear if any significance actions are to be carried out with the correction factors referenced above in step 7. Is the point of the sentence to simply warn the user to consult manufacturer's instructions to ensure correct application of correction factors?

Note: Instruments have built in stored corrections factors for many products or see Table X.2 Density Coefficient Factor (Alpha)

Note: Use of a syringe may be desirable to allow sample specimen to achieve ambient temperature prior to introduction of specimen into testing cell and for viscous specimens.

Transferring the product via a syringe can be a source of error. Language should be added to the "Note" as to how to transfer the product from the syringe to the portable digital density meter. There is still skill involved in filling a syringe with a sample properly ensuring that the syringe is free of other liquids, that the syringe material and the sample are not incompatible, that the sample coats the walls of the syringe, that bubbles are expelled especially in the case of viscous liquids such that the transfer of the liquid from the syringe to the density meter ensures a homogeneous liquid in the meter.

8. Once the temperature reading on the portable digital density meter has stabilized (maintained reading ± 0.2 °C (± 0.5 °F) for 10 seconds), record density and temperature as indicated on instrument. Instruments have a measurement mode setting that shall be set in the most "accurate" mode (e.g., precise mode) as defined by the manufacturer.

9. Apply the density coefficient of expansion (Alpha) also known as the density correction factor, to correct to the reference temperature. See Table X.2. Density Coefficient Factor (Alpha). If the Alpha correction is not known, then the factor can be calculated using the below formula.

After this correction, this value is the density of the substance in the vacuum at the prescribed reference temperature. Calculating the Temperature Coefficient Alpha as used in Anton Paar instruments. See other instrument manuals for their alpha values and method of calculating alpha values for their specific instruments.

OWM agrees with the submitter with adding back in Table X.2. Density Coefficient Factor (Alpha) which was previously removed by the L&R Committee due to the values within the table not being validated. The use of this table would be useful to assist an inspector in saving time by not having to calculate the value. Prior to adding such a table, the source of alpha values must be verified and cited in the procedure. Table X.2 "Density Coefficient Factor (Alpha) adds value by providing a quick look up for inspectors. The submitter plans to verify the values of all items in the table indicating the source and verification of the alpha correction factors.

The source of alpha values needs to be verified and cited in the procedure or within an appendix. An analysis of the likely uncertainty of locally calculated alpha values must be completed to verify impact on final calculated volumes. A report of the uncertainties of the digital density meter to the volumetric test procedure should be provided. Some of the questions that need to be answered include:

- What type of uncertainty can one expect when approximating the density coefficient factor (Alpha) with the below equations?
- Is there a reference that can be cited for the Alpha coefficient factor equation?

This part is very confusing. By omitting any kind of explanation about the conversion from density (apparent density) to volume at the measurement temperature, the rest of the procedure makes no sense to the reader. It is very difficult for the inspector to understand what exactly he/she is measuring (apparent density) at the present temperature, and why corrections need to be made and how. Simplify the relationship between density at measured temperature to density at reference temperature and the use of the temperature coefficient and how these values can be obtained (1) via measurement at two temperatures (2) prior knowledge (i.e., lookup table for the equipment). Even if the instrument has an automated conversion factor, this needs to be made clear.

Temperature coefficient Alpha $= \left| \frac{\rho^1 - \rho_2}{T^1 - T_2} \right|$

ρ_1 …. density at temperature T_1

ρ_2 …. density at temperature T_2

T_1 …. temperature at initial measurement

T_2 …. temperature at second measurement

Notes:

- **If the density correction factor is not known but the volume correction factor is known, the density correction factor can be calculated from the volume correction (VCF) factor using the following formula.**
- **Density Temperature Factor Alpha = Absolute Value of VCF × Density.**

Many terms appear without being properly defined. These include such terms as:

1) Temperature coefficient alpha,
2) density correction factor,
3) volume correction factor,
4) density temperature factor alpha (is that the same as temperature coefficient alpha above?)
5) absolute value of beta (what is beta?) and what is density in this equation, is this density at the measured temperature.

Note: Influence of viscosity on density result will be automatically corrected by the portable digital density meter for highly viscous samples.

The density meter automatically applies the correction. The corrections must be proven reliable and verifiable.

Part of the established "criteria" in the test procedure is that a Portable Digital Density Meter used for package checking must provide automatic correction factors. OWM recommends the accuracy and validation of these alpha values be better defined and provide guidance on how to do so.

There needs to be more information on the provenance of these alpha values, whether from a handbook, from a manufacturer's prior measurements, but it needs to be separate from the meter itself. It is insufficient to say that the meter corrects for it. We must know how it makes that correction or at least an estimate of how much this affects the measurement.

10. Apply the apparent density correction by applying one of the following steps:

(a) multiplying the density by 0.999; or

(b) multiplying the density by the Apparent Mass Factor from Table X.4.; or

(c) calculate apparent density by using the following:

Converting True Density into Apparent Density

The apparent density is defined as:

$$Paap = \frac{Ptrue,sample - Pair}{1 - \frac{Pair}{8.0\ g/cm3}}$$

Where:

Paap = apparent density of the sample

Psteel = 8.0 g/cm3

Pair = true density of air

Ptrue,sample = true density of the sample

The apparent density is smaller than the true density and can be calculated from the true density considering the buoyancy of the sample in air and the weight and density of a reference weight in steel.

***Pair = true density of air as calculated from equation in Table X.1. Density Measurement.**

After application of this factor or calculation, the new value is density of the substance in air.

There are three ways to apply the apparent density correction. Consideration should be given to provide the "best" method.

A very short explanation of density at ambient, density at reference temp, and why you need temperature corrections and how, should be mentioned further up. The referencing to steel at this junction is not necessary to the user.

20. Drain the instrument and repeat Steps 7–10 on a second specimen of the same package for verification of first measurement.

At the end of Step 10 there is a sentence that reads:

"The apparent density is smaller than the true density and can be calculated from the true density considering the buoyancy of the sample in air and the weight and density of a reference weight in steel."

Should it state "The apparent density is smaller than the true density and can be calculated from the true density considering the buoyancy of the sample in air and the weight and density of a reference weight in **stainless** steel."

Are there any references that can be cited for the above equations?

Is there a provision on what type of syringe that can be used? For example, you would not want to use an ordinary plastic syringe for petroleum products as it can dissolve some of the syringe material and contribute to the density measurement.

11. Note: It is not necessary to fully clean the cell between measurements for the second specimen of the same sample. Simply flush the cell using the same sample at least two times before taking your second measurement. Compare the two specimen readings, they must agree within 0.0003 g/cm^3. Calculate the average density of the two specimens from the sample. If the difference of two readings is greater than 0.0003 g/cm^3, discard results and repeat testing of sample. Air or undissolved gas will cause erroneous measurement errors. The user of the shall always visually inspect for undissolved gas in the measurement tube for a valid test.

12. Drain the instrument and repeat testing for the second (or subsequent) package of the sample, repeating Steps 6–12.

13. Calculate the Average Product Density of sample 1 and 2. The two results must agree within 0.0005 g/cm^3. If the difference between the densities of the two packages exceeds 0.0005 g/cm^3, use the volumetric procedure in Section 3.3. "Volumetric Test Procedure for Non-Viscous Liquids", or you may continue the testing of all the subsequent sample packages selected from the lot using Steps 6-13.

14. Determine the Average Used Dry Tare Weight of the sample according to provisions of Section 2.3.5. "Procedures for Determining Tare."

15. Calculate the "nominal gross weight" using the following formula:

Nominal Gross Weight = (Average Product Density [in weight units]) × (Labeled Volume) + (Average Used Dry Tare Weight)

16. Weigh the remaining packages in the sample.

17. Subtract the nominal gross weight from the gross weight of each package to obtain package errors in terms of weight. All sample packages are compared to the nominal gross weight.

18. To convert the average error or package error from weight to volume, use the following formula:

Package Error in Volume = Package Error in Weight ÷ Average Product Density Per Volume Unit of Measure

3.X.3. Evaluation of Results

Follow the procedures in Chapter 2, Section 2.3.7. "Evaluate for Compliance" to determine lot conformance.

3.X.4. Cleaning and Storage of Digital Density Meter

Anytime the portable digital density meter is used to test a different commodity, or if the digital density meter use is done for the day and going to be stored after final use, the instrument shall be drained and cleaned following the manufacturer's recommended cleaning procedures and using two cleaning agents. The first cleaning agent removes sample residue, and the second cleaning agent removes the first cleaning agent. See Table X.5. Cleaning Agents for examples of cleaning agents recommended by a digital density meter manufacturer.

NOTE: If the unit will be immediately used to measure another sample of similar composition (e.g., milk with different fat contents, different viscosity oils), the unit may be drained and flushed with the new sample three times before the next analysis.

If the density meter is not going to be used within 2 days, it is recommended that the measuring cell be dried using an external low-pressure air source. Bypassing the internal pump may be necessary to dry the measuring cell. After a thorough cleaning, connect the portable digital density meter to a low-pressure air source, (e.g., aquarium air pump) to dry the unit's measurement cell. This will ensure no buildup of deposits in the measuring cell and no long-term drift of the instrument calibration. To determine if the measuring cell is "dry", the density will display an air value of 0.0012 g/cm$^{3.}$ See Table X.1. Air Density Calculation. If this value is not achieved, additional cleaning may be necessary.

NOTE: The digital density meter must be properly stored to avoid the possibility of any water residue within the measuring cell from freezing.

How exact to 0.0012 g/cm³ should the Portable Digital Density Meter display when dry? Wouldn't it depend on surface elevation among other things?

What is the guidance for properly storing Portable Digital Density Meter to prevent measuring cell from freezing, regarding the above note?

Table X.1.
Air Density Calculation

Calculate the density of air at the temperature of test using the following equation

ρ_{air}, g/mL = 0.001293[273.15/T][P/760]

Where:

T = temperature, K, and

P = barometric pressure, torr.

°C	mmHg	d_{air}, g/mL
15.56	760	0.001223314

Table X.2.
Density Coefficient Factor (Alpha)

Notice: This Table is currently under development. Missing data will be added after additional research and validation is completed. (Rev 11/15/2022)

Note: Do not use these alpha values if they are outside the accepted temperature range as shown.

Product	alpha(α1)/°C |(p1-p2)/(T1-T2)|	alpha(α2)/°C (d2/d1-1)/(T1-T2)	Temperature Range	Typical Density at ref temp, g/cm^3	Source of derived information	Reference Temperature, °C
Petroleum Products use α1 (AntonPaar) or α2 (MettlerToledo) for specific instrument						
n-Heptane						15.56
Iso-Octane	0.00085	0.001243	10 - 30°C		NBS SRM 2213	15.56
n-Pentane						15.56
Toluene	0.00092	0.00107	10 - 30°C	0.8710	ASTM D1555	15.56
o-Xylene	0.00082	0.00094	10 - 30°C	0.8834	ASTM D1555	15.56
m-Xylene	0.00084	0.00098	10 - 30°C	0.8678	ASTM D1555	15.56
p-Xylene	0.00086	0.00101	10 - 30°C	0.8646	ASTM D1555	15.56
mixed Xylenes	0.00084	0.00098	10 - 30°C		ASTM D1555	
Generalized Petroleum Products (ASTM D1250) Footnote [1]						
Automatic Transmission Fluid	API Density D	API Density D	4 - 44°C	-	ASTM/API/IP	15.56
Camp Fuel, White Gas	API Density B	API Density B	4 - 44°C	-	ASTM/API/IP	15.56
Diesel, heating oil	API Density B	API Density B	4 - 44°C	0.81 - 1.08	ASTM/API/IP	15.56
Engine Oil	API Density D	API Density D	4 - 44°C	-	ASTM/API/IP	15.56
Gasoline	API Density B	API Density B	4 - 44°C	0.65- 0.78	ASTM/API/IP	15.56
Kerosene, jet fuel	API Density B	API Density B	4 - 44°C	0.79 - 0.84	ASTM/API/IP	15.56
Mineral oil	API Density D	API Density D	4 - 44°C	-	ASTM/API/IP	15.56
Paint Thinner	API Density B	API Density B	4 - 44°C	-	ASTM/API/IP	15.56
Petroleum Ether	API Density B	API Density B	4 - 44°C	-	ASTM/API/IP	15.56
-	-	-	-	-	-	-
Other Liquids and Wine (use α1 (AntonPaar) or α2 (MettlerToledo) for specific instrument						
Acetic acid	-	-	-	-	-	20

Table X.2.
Density Coefficient Factor (Alpha)

Notice: This Table is currently under development. Missing data will be added after additional research and validation is completed. (Rev 11/15/2022)

Note: Do not use these alpha values if they are outside the accepted temperature range as shown.

Product	alpha(α1)/°C |(p1-p2)/(T1-T2)|	alpha(α2)/°C (d2/d1-1)/(T1-T2)	Temperature Range	Typical Density at ref temp, g/cm^3	Source of derived information	Reference Temperature, °C
Acetone	-	-	-	-	-	20
Alcohol, ethyl (ethanol) 100%	0.00086	0.00109	0 - 40°	0.79304	Measurement Canada	15.556
Alcohol, methyl	-	-	-	-	-	20
Ammonia	-	-	-	-	-	20
Aniline	-	-	-	-	-	20
Antifreeze 50/50 (ethylene glycol)	-	-	-	-	-	20
Diesel Exhaust Fluid	-	-	-	1.0870 - 1.0930	ISO 22241	20
Distilled Spirits	-	-	-	-	-	15.56
Ether	-	-	-	-	-	20
Ethyl acetate	-	-	-	-	-	20
Ethylene glycol	-	-	-	-	-	20
Glycerin (glycerol)	-	-	-	-	-	20
Isobutyl alcohol	-	-	-	-	-	20
Iso-propanol (70%)	-	-	-	-	-	20
Iso-propanol (91%)	-	-	-	-	-	20
Iso-propanol Anhydrous (100%)	0.00083	0.00107	5 -30 °C	0.7850	-	20
Methyl Ethyl Ethyl Ketone	-	-	-	-	-	20
Olive oil	-	-	-	-	-	20

Table X.2.
Density Coefficient Factor (Alpha)

Notice: This Table is currently under development. Missing data will be added after additional research and validation is completed. (Rev 11/15/2022)

Note: Do not use these alpha values if they are outside the accepted temperature range as shown.

Product	alpha(α1)/°C |(p1-p2)/(T1-T2)|	alpha(α2)/°C (d2/d1-1)/(T1-T2)	Temperature Range	Typical Density at ref temp, g/cm^3	Source of derived information	Reference Temperature, °C
Sulfuric acid, concentrated	-	-	-	-	-	20
Turpentine	-	-	-	-	-	20
Water	0.00021	0.00021	-	0.9982	NIST.IR.6969-2018 Table 9.10	20
-	-	-	-	-	-	-
Dairy Products (use α1 (AntonPaar) or α2 (Mettler Toledo) for specific instrument						
Dairy Products	alpha(α1)/°C |(p1-p2)/(T1-T2)|	alpha(α2)/°C (d2/d1-1)/(T1-T2)	Temperature Range	Typical Density at 4°C	Source of derived information	Reference Temperature, °C
Homogenized milk	0.00025	-	4 - 20 °C	1.033	Footnote [2]	4.4
Milk, 2%	0.00022	-	4 - 20 °C	1.034	Footnote [2]	4.4
Skim milk	0.00019	-	4 - 20 °C	1.036	Footnote [2]	4.4
Fortified skim	0.00019	-	4 - 20 °C	1.041	Footnote [2]	4.4
Half and half	0.00044	-	4 - 20 °C	1.027	Footnote [2]	4.4
Half and half, fort.	0.00044	-	4 - 20 °C	1.031	Footnote [2]	4.4
Light cream	0.00056	-	4 - 20 °C	1.021	Footnote [2]	4.4
Heavy cream	0.00088	-	4 - 20 °C	1.008	Footnote [2]	4.4

Footnotes:

1. **Instrument with built in tables for Generalized Petroleum Products (ASTM D1250)**
2. **Goff, H.D., Hill A.R. "Dairy Chemistry and Physics", University of Guelph**
3. **Alpha (α1) values are used in Anton Paar Instruments**
4. **Alpha (α2) values are used in Mettler Toledo Instruments**

Notice: This Table is currently under review. It should not be used without validation.

The source of alpha values verified at a specific temperature range should be added.

The alpha values for the two instruments have different units. Anton Paar uses density per degree while Mettler Toledo uses per degree (this is more common for coefficients of thermal expansion). If you divide the Anton Paar by a density value, then they're about the same. They won't be exactly the same out of the instruments since it depends on the instrument's interpolation techniques used.
A closer look needs to be done in how the procedure as written.

Table X.3.
Viscosity Corrections of Common Materials

Note: Values for Viscosity and Corrections are published in XXXX.

Material	Viscosity in Centipoise (at 20° C)	Correction g/cc
Water	1 cP	
Milk	3 cP	
Castrol Oil	1,000 cP	0.0008
Karo Syrup	5,000 cP	0.0008
Honey	10,000 cP	0.00085

Table X.4.
Apparent Mass Factor

Elevation, ft	sea level	1500	3000	4500	6000
Barometer, mmHg	760	720	680	640	600
density, g/cc	Apparent Mass Factor				
0.500	0.9977	0.9979	0.9980	0.9981	0.9982
0.600	0.9981	0.9982	0.9983	0.9984	0.9985
0.700	0.9984	0.9985	0.9986	0.9987	0.9988
0.800	0.9986	0.9987	0.9988	0.9989	0.9989
0.900	0.9988	0.9989	0.9989	0.9990	0.9991
1.000	0.9989	0.9990	0.9991	0.9991	0.9992
1.100	0.9991	0.9991	0.9992	0.9992	0.9993
1.200	0.9991	0.9992	0.9992	0.9993	0.9993
1.300	0.9992	0.9993	0.9993	0.9993	0.9994
1.400	0.9993	0.9993	0.9994	0.9994	0.9994
1.500	0.9993	0.9994	0.9994	0.9994	0.9995

Elevation or prevailing barometric pressure at the location of measurement.

OWM questions why Table X.4. Apparent Mass Factor stops at density 1.500. An earlier a statement was made that the process is good for density values from 0 to 3 g/mL. There should be a note to address this difference and instructions about what to do if a value greater than 1.5 is measured. Consideration either sating the range from 1.6000 – 3.000 in the table should be added or a formula provided for the user to calculate (refer user to Step 10, option 3).

Table X.5.
Cleaning Agents

(Examples of cleaning agents recommended by digital density meter manufacturers. Verify the proper cleaning agent for the digital density meter used based on manufacturers recommendation.)

Commodity	Cleaning Liquid 1	Cleaning Liquid 2
Petroleum products	Toluene, petroleum naphtha, petroleum ether, n-nonane, cyclohexane	Ethanol
Battery acid	Tap water	Ultra-pure (bi-distilled or deionized) water
Liquid soap and detergent, shampoo	Tap water	Ultra-pure (bi-distilled or deionized) water
Salad dressing, mayonnaise	Petroleum naphtha, dish washing agent in water	Ethanol
Suntan lotion	Tap water	Ethanol
Spirits	Tap water	Ultra-pure (bi-distilled or deionized) water
Grape juice, syrup	Warm tap water	Ultra-pure (bi-distilled or deionized) water
Milk*	Tap water, enzymatic lab cleaner	Ultra-pure (bi-distilled or deionized) water

***NOTE: Do not introduce ethanol or other alcohols into instrument without first flushing all milk products from instruments.**

Summary of Discussions and Actions:

At the 2022 NCWM Interim Meeting, the Committee assigned Voting status for this item. The Committee believes the latest proposal is fully developed, addressed previous concerns and is therefore ready for a vote. Additionally, the Committee believes this item will provide a tool to Weights and Measures Officials that will improve efficiency during inspections while maintaining current testing accuracy levels.

Note: The Committee removed Table X.1. Density Coefficient Factor (Alpha) because it has not been validated. The Committee spoke to the original submitter, and they agreed that the proposal can still go forward as a Voting Item without the table; it is not necessary for it to be included for field use.

The Committee received additional information on this item from NIST OWM after the meeting stating the item is being reviewed by NIST OWM. NIST OWM submitted proposed changes and comments to the Committee for their consideration. These proposed changes and comments will be provided online to membership before the 2022 NCWM Annual Meeting.

At the 2022 NCWM Annual Meeting, new information was presented to the Committee by the submitter that recommended the following changes:

- Change "Volumetric" to "Gravimetric" in the title
- 3.X.1. Testing Equipment for portable digital density meter, add additional requirements
    - Insert "**Resolution**" which includes **Density of 0.0001 g/cm^3** and **Temperature of 0.1 °C (0.1 °F)**, which was inadvertently left out in prior publications.
- Correct an error to the viscosity formula by removing the word "adding" and inserting the word "subtracting" 3.X.2. Test Procedure.

The Committee removed Table X.1. Density Coefficient Factor (Alpha) from the proposal at the 2022 NCWM Interim Meeting due to the data not being validated. The Committee recommends that the submitter validate Table X.1. Density Coefficient Factor (Alpha) and reinsert it into the proposal for the Committee to reconsideration.

The Committee also reviewed the 2022 NIST **OWM Analysis** and their comments during open hearings. OWM noted that use of this equipment has great potential to facilitate package testing for many viscous and non-viscous liquids, as well as other weights and measures inspection areas. Some concerns with the Item Under Consideration is the limited testing analysis provided by the submitter comparing the digital density meter to the current NIST Handbook 133 volumetric test procedure. Data on only five items were submitted which is insufficient to statistically validate results to ensure the test procedure will be defensible for use in official inspections. Before this procedure can be determined for use as an Enforcement procedure, the proper calibration and validation methods of the device, limitations of the devices use, and whether adding a step for using a viscometer to determine viscosity before determining the density would need to be considered. It was also noted that none of the four Regions moved the item forward as a Voting Item.

Based on the above information, the Committee deescalated the item to Informational status with the intent of forming a TG to further develop the item. Other concerns were:

- The NIST OWM analysis identified areas that needed to be addressed before the item should be used for regulatory purposes.
- Adding Table X.1. Density Coefficient Factor (Alpha) back into the procedures was a substantive change requiring time for membership to review before voting.
- Concern that proceeding with the test procedure without addressing the NIST OWM concerns could negatively impact regulatory actions.

Mr. Hayes stated he support this item moving forward as an audit procedure. Mr. Sefcik clarified that even as an audit procedure that additional time is needed to properly evaluate this test procedure that provides accurate results.

During the Voting Session the Committee was strongly urged to return this item to Voting status by membership put forth a formal motion to amend the Committee report.

After deliberations the Committee agreed to amend the item with modifications to the proposal that included:

- 3.XX replace the word "Volumetric" with "Gravimetric".

- In Section 3.X.1. the table that starts with "Measuring Range requires an insertion of a row between "temperature and sample volume" add a row for "Resolution" followed by density 0.001 gm cu^2 temperature – temp 0.1 °C or 1 °F.

- Section 3.X.2. Test Procedure – Correct an error to the viscosity formula by removing the word "adding" and inserting the word "subtracting".

Chair McGuire provided membership with the reasons the Committee believed that the Item was not fully developed and if put into NIST Handbook 133, and enforcement action is taken, attorneys could challenge it legally. The Committee did not concur with taking a Vote on this Item but allowed the membership to proceed with a vote. This Item nether passed or failed and was returned to Committee.

Regional Association Reporting:

Western Weights and Measures Association

At the 2021 WWMA Annual Meeting, Mr. Hayes provided testimony for support of this Item, it is resubmitted from a past Item with updated language. Mr. Hayes indicated there are three volunteers who are testing this procedure for validation. He believes the process and technology are sound and is twice as accurate as the current method for some products. If approved this method would significantly decrease inspection times. Mr. Ivan Hankins (Iowa) asked for clarification on how this will replace the way tests are currently conducted. Mr. Hayes responded saying this method will reduce tests times which would be better for field personnel. Mr. Hayes expanded that he has tested this in dairies, with the new method taking minutes and the old method taking hours. Mr. Kevin Schnepp (CDFA-DMS) supported the continuing development of this Item but asked to see the aggregated data that supported the proposal. He also asked how often the unit needed to be calibrated, for the different products outlined in the proposal. Mr. Hayes responded that the data is being compiled into a report and provided information on the procedures on how to validate the calibration. Mr. Hayes clarified on how to calibrate the equipment. Ms. Lisa Warfield (NIST OWM) supports the development of this test procedure and applauds Mr. Ronald Hayes for working on this. OWM submitted an analysis and agrees these devices may be used in audit testing. Ms. Warfield made statements that highlighted items provided in the OWM analysis supporting documentation. Mr. Hayes responded to items in the OWM analysis, particularly barometric pressure by stating that this can be corrected for by using a correction factor listed in the agenda item. Ms. Lisa Warfield stated that the word approximate must be removed from all tables. Mr. Hayes replied that he believed that this had been accomplished but it is still documented in Table X.2. Approximate Viscosities of Common Materials. Mr. Hayes also replied that he is looking for collaboration and continued support from NIST in this matter.

The Committee recommends that this Item be Assigned. The Committee recommends that L&R National Chair create a Task Group headed by Mr. Hayes that can work on gathering and assessing data to advance this proposal for use as an audit tool and eventually an enforcement tool.

At the 2022 WWMA Annual Meeting, Mr. David Sefcik (NIST OWM) worked extensively with the submitter. Engaged with lab metrology group to help validate performance and accuracy of meter. Does not believe that the procedure has been properly vetted. Does understand that the technology does work. The procedure needs to be worked for better ease of use and reliability. Needs to be clear and concise and contain all of the information needed. Recommends a task group be formed and this item be assigned, no jurisdictions have worked through the procedures and submitted comments or feedback. Mr. Floren (Los Angeles County, California) stated that the procedure does work, but we need to see properly vetted data to support it. To prevent this item from going round and round, assign it to a national task group to gather additional data, testimonials, and work the item. Mr. Ed Williams (Ventura County, California) and Mr. Kevin Schnepp also supported this procedure but recommended it get assigned to a task group to validate and vet the procedure.

The WWMA L&R Committee recommends that this item be Assigned. The Committee recommends that the NCWM L&R Chair create a Task Group to include Mr. Hayes that can work to clarify and validate the test procedure to advance this proposal. This Task Group should be formed prior to the 2023 NCWM Interim Meeting.

Central Weights and Measures Association

At the CWMA 2021 Interim Meeting, Mr. Hayes commented that he rewrote the method from its original version, and Table X.1. (untitled) which list the product, alpha/°C, Typical Density at 20°C, g/cm^3, and reference temperature is currently under review. He also mentioned the ASTM test methods that have been in the marketplace for several years, and he believes with the changes in Table X.1. and a few additional changes, he believes the item will be ready for Voting status. He is asking for volunteers to collect data using this instrument. Ms. Lisa Warfield (NIST OWM) commented that the NIST analysis captures areas for improvement and supports the development of this item as an audit procedure. Mr. Mike Harrington (Iowa) commented that he supports this as a Voting Item rather than be assigned to a task group to collect data. The Committee believes the item is fully developed by the original submitter and supports further testing by states and recommends Voting status.

At the 2022 CWMA Annual Meeting, Mr. Ron Hayes the item's submitter asked Mr. Upschulte to read an update during Open Hearings. Mr. Hayes believes this proposal is fully developed and has been working with NIST to address their suggestions and concerns. Ms. Warfield commented that the item should be deescalated to Developing status or as an Assigned Item to a task group through NCWM to collect data to verify accuracy and consistency of measuring devices. She stated that the use of this equipment has great potential to facilitate testing in package checking as well as other weights and measures inspection areas but that for it to be used in regulatory action it is essential to validate the traceability of measurements made using the equipment. Lastly, Ms. Warfield stated that the title to this section is incorrect and should read 3.X. Gravimetric Test Procedure for Viscous and Non-Viscous Liquids by Portable Digital Density Meter. Mr. Charlie Stutesman (Kansas) commented that if the item is deescalated, the Committee should recommend what still needs developed. He believes if the submitter feels the item is ready for Voting status, it should be voted up or down. On the other hand, he would also support the formation of a task group at the national level. Mr. Ivan Hankins (Iowa) commented that he agrees with Mr. Stutesman and believes the Voting status should remain on this item.

The Committee discussed this item at length and believes digital density meters are currently and will continue to be useful devices in weights and measures inspections. The Committee believes this item can

be strengthened by increasing data for validation and thinks assigning the item to a TG could be beneficial to finish development of this item.

At the 2022 CWMA Interim Meeting, Mr. Hayes commented he has been working with NIST's Mr. Sefcik to address concerns. He stated this technology has been used for more than 50 years. He explained the changes made and believes it is ready for Voting status. Mr. Hankins supports this item moving forward with Voting status. Mr. Doug Rathbun (Illinois) commented he is concerned this item is fully developed if there is additional data that needs to be collected. Mr. Doug Musick (Kansas) commented digital density meter technology is already in use in Kansas. He wants to see a final version move forward as a Voting Item. Mr. Musick further commented he believes NIST should be supporting this item and helping move it forward. Why aren't they? This item is well-established technology and would make the process of enforcement much more efficient. Mr. Hayes' most recent version to address NIST concerns is below. He noted that if the Alpha version of "Table X.2. Density Coefficient Factor" prohibits Voting status for this item, it should be removed from the model language and could be used as reference in an appendix. The Committee asked the developer if the dashes in the table indicate the information is to be determined. Mr. Hayes indicated that this information is forthcoming. After considerable discussion, the Committee believes the item is fully developed and believes information for the table will continue to be added over time. However, the content of the Alpha table should not impede this item from Voting status.

Southern Weights and Measures Association

At the 2021 SWMA Annual Meeting, no comments were heard during open hearings. NIST OWM provided a written analysis documenting their support of the development of this item. The Committee recommends this as a Developing Item. Studies should continue until such time that sufficient evidence can be provided showing that these devices provide density values equivalent to those measured found using existing test methods.

At the 2022 SWMA Annual Meeting, Ms. Lisa Warfield (NIST OWM) commented on the ongoing review of the language and the amount time and effort input by the submitter. She believes this item is not ready for Voting status and that more work is still needed for inspector use. She recommended that NCWM develop a task group for this item. Mr. Ken Ramsburg (Maryland) also suggested and supports a task group to work on this item.

There was a written update not accepted by the Committee due to its late submittal provided by the submitter that the Committee nor the floor was able to review before open hearings. The Committee wants the National L&R Committee and Membership to comment on the latest updated language.

The Committee recommends this item as Informational with the updated language.

Northeastern Weights and Measures Association

At the 2021 NEWMA Interim Meeting, Mr. Hayes commented that this is a complete rewrite of a previously submitted proposal that the NCWM L&R Committee withdrew. This method, which has been used for several years in the liquid fuels and lubricants industry. He indicated the item is ready for Voting status. He will continue to communicate with OWM to work through the comments they included in their analysis of the item and will have all the edits and additions completed by the 2022 NCWM Interim Meeting. Mr. David Sefcik (NIST OWM) commented that NIST supports continued development of this item and to work with Mr. Hayes to resolve any remaining questions. Mr. Sefcik further commented that these devices are being widely used in other countries in the verification of the net quantity of contents by legal metrology programs, but the U.S. has been slow to adopt them. He believes it would be valuable for states to do

additional testing to provide sufficient evidence that these devices can provide density values equivalent to those found using existing NIST HB 130 test methods. This will also help move this from an audit test procedure to an actual test procedure. The Committee recommends the item be given Assigned status to an NCWM Task Group to elevate this to a Voting Item. Ms. Warfield commented that NCWM L&R Chair McGuire requests from the NCWM Chair to form a TG to develop this item. The Committee concurs that development of this item should be done through a TG.

At the NEWMA 2022 Annual, Mr. Sefcik noted that the current Item Under Consideration was provided to the National L&R one day before the NCWM Interim and significant updates and changes were done on this item. In addition, at the Interim in January, the L&R Committee made additional modifications. Recognized and commended the submitter and for working tirelessly to make changes on this item prior to the NCWM (2022) Interim Meeting. However, it is OWM's belief that this item requires more time for the members to review and evaluate it. NIST OWM, and we believe others, need additional time to adequately consider the most recent version. This is a highly technical procedure! It is too important of an item not to spend the time to properly evaluate it. OWM asked its lab metrology staff to assist with a review of the proposal to help determine and assess any technical gaps. There is limited testing analysis provided by the submitter comparing the digital density meter to the current NIST Handbook 133 volumetric test procedure. Data on only four items were submitted which is insufficient to statistically validate results to ensure the test procedure will be defensible for use in official inspections. He reminded the NEWMA L&R Committee they had recommended previously a task group be formed for further development and OWM echoes this recommendation. Many regulators found it confusing when reading the proposed item. NEWMA L&R Committee recommends this item be Assigned to a newly formed portable digital density meter TG.

At the 2022 NEWMA Interim Meeting, Ms. Warfield commented that NIST OWM has submitted online comments and is working closely with the submitter, Mr. Hayes as well as in-house. NIST believes the item could substantially improve the efficiency of inspectors but does not believe the item is ready for Voting status. Mr. Hayes commented that he has been working with Mr. Sefcik and has attempted to address every concern NIST has submitted to him. Mr. Hayes has also submitted an updated version and has reinserted some additional data in a table that previously was not complete. He added RFID requirements to upload more methods (different products) which can be tested by the device. While he has worked with primarily one manufacturer, he has reached out to others who are slow to respond. Chair Sakin commented that he is concerned that the newest version has not been reviewed by the full membership. Ms. Warfield acknowledged that NIST had received Mr. Hayes' latest version for review. Mr. John McGuire (New Jersey) commended Mr. Hayes for his work as well as NIST for purchasing new density meters to advance this item in the NIST lab. Mr. McGuire recommends the item be given Assigned status to get additional data and work that needs to be completed. Mr. Walt Remmert (Pennsylvania) and Mr. Jim Cassidy (Massachusetts) concur. The Committee recommends that this item be given Assigned status so work can be completed to get the instrument in the field for use. The Committee recommends Assigned status for this item.

OTH – Other Items

OTH-22.1 A Uniform Regulation for E-commerce Product Identity, Net Quantity, Responsible Person, Price, and Unit Price Information

Source: NCWM Packaging and Labeling Subcommittee (PALS)

Submitter's Purpose and Justification:

Provide an update of the activities of PALS which works on direction from and reports to the L&R. This is to propose a new regulation for Handbook 130 covering sites and products which are sold through e-commerce.

While e-commerce continues to grow and evolve, most people, entities, and regulators are trying to extrapolate existing requirements to these sites and products involved with e-commerce – with varying degrees of success. This regulation is intended to be a foundation for e-commerce regulation, focusing just on basic requirements such as the name of the item the net quantity of the item, and the price of the item.

Some may argue that existing regulations are good enough and NCWM should wait for other Federal Agencies to take the lead. Companies may need time in order to change their websites or products to comply.

OWM Executive Summary for OTH-22.1 – Uniform Regulation for E-commerce Product Identity, Net Quantity, Responsible Person, Price, and Unit Price Information

OWM Recommendation: OWM concurs that this item has merit and should be made Informational to allow for greater stakeholder input including NCWM membership.

- OWM supports the continued work and development of this item through PALS. OWM agrees that greater stakeholder outreach is needed and should continue. OWM will assist PALS in reaching out to stakeholders once they are determined by PALS.
- To align with the other HB130 regulations the "Status of Promulgation" should read "The table beginning on page 6 Section II. Uniformity of Laws and Regulations shows the status of adoption of the Uniform Regulation for E-commerce Product Identity, Net Quantity, Responsible Person, Price, and Unit Price Information**."**
- This extensive proposed model regulation has heard very little input or comment from NCWM membership. We encourage membership to give this proposed regulation a critical review.
- Numerous formatting changes were provided in the OWM analysis to align the regulation with Handbook 130 formatting. OWM will work with PALS to identify these changes and to recommend corrections.

Table 3. Summary of Recommendations

OTH-22.1 ‑ Uniform Regulation for E-commerce Product Identity, Net Quantity, Responsible Person, Price, and Unit Price Information

	V	D	W	A	I	Note*	Comments
Submitter							
OWM					✓		
CWMA					✓		
WWMA				✓			
SWMA				✓			

Table 3. Summary of Recommendations							
OTH-22.1 – Uniform Regulation for E-commerce Product Identity, Net Quantity, Responsible Person, Price, and Unit Price Information							
	V	**D**	**W**	**A**	**I**	**Note***	**Comments**
NEWMA				✓			
NCWM							

***Notes Key:**
1 – Submitted modified language
2 – Item not discussed
3 – No meeting held
4 – Not submitted on agenda
5 – No recommendation or not considered

Item Under Consideration:

Uniform Regulation for E-commerce Product Identity, Net Quantity, Responsible Person, Price, and Unit Price Information

1. Background

The Uniform Regulation for E-commerce Product Identity, Net Quantity, Responsible Person and Price Information was adopted during the 1XXth Annual Meeting of the National Conference on Weights and Measures (NCWM) in 202X.

The National Conference has adopted a model e-commerce regulation to assist those states authorized to adopt such a regulation under provisions of their weights and measures laws. The customer benefit of having clear and consistent price, quantity and identity information during an e-commerce transaction should be greater confidence that a product purchased is actually the product they intended to purchase. The manufacturer benefit of this e-commerce regulation is clear expectations of what information is required to be provided on e-commerce sites offering products for sale and product information accompanying product delivery.

Nothing contained in this regulation should be construed to supersede any labeling requirement specified in federal law.

2. Status of Promulgation

Uniform Regulation for E-commerce Product Identity, Net Quantity, Responsible Person and Price Information

Preamble

The purpose of this regulation is to provide accurate and adequate identity and net quantity information for products sold via e-commerce to help facilitate purchaser confidence in e-commerce purchases. This regulation establishes requirements for e-commerce sites offering products for purchase, product labeling for products sold via e-commerce and for receipts which detail the identity, quantity and price the consumer paid upon product delivery. This regulation applies to

product identity, net quantity, responsible parties and price information and is not intended to apply to other product labeling or quality requirements.

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Section 4. Required Information for E-commerce Products Upon Delivery.

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4.2. Random Package E-commerce Delivery Requirements.

4.3. Bulk Product E-commerce Delivery Requirements

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Section 5. Unit Pricing Requirements on E-Commerce Sites for Products Offered for Sale.

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Section 8. Declaration of Responsible Person: E-commerce Products

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Section 9. Product Photograph or Accurate Product Depiction/Representation: E-commerce Site Requirements

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9.4. E-commerce Non-Consumer Packages.

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Section 10. Prominence and Placement of Required Information on E-commerce Sites: Offering E-commerce Products for Sale

10.1. General Requirements

10.2. Combined Declarations of Required Information

Section 11. Prominence and Placement: Delivered E-commerce Packages, Products and Receipts

11.1. General Requirements

11.2. Packages Intended for Sale in Retail Locations

11.3. Orientation of Required Declarations

Section 12. Effective Date

Section 1. Application

This regulation shall apply to products and transactions which occur when purchasers are not present to purchase a consumer or non-consumer product in person.

This regulation specifically establishes requirements for web-based sales (including smartphone and computer applications) and other sites/programs which offer products for sale and permit customers to make purchases without being physically present to inspect and select individual products and commodities in-person. This regulation also applies to any product information which shall accompany the transactions including labeling and receipts.

This regulation shall not apply to:

(a) inner wrappings not intended to be individually sold to the customer

(b) shipping containers or wrapping used solely for the transportation of any commodities or products

(c) shipping containers and inner wrappings for products or commodities purchased in quantity by manufacturers, packers, or processors in industrial proportions, or to wholesale or retail distributors who subsequently distribute or offer for sale products and commodities

(d) auxiliary containers or outer wrappings used to deliver packages of such commodities to retail customers if such containers or wrappings bear no printed matter pertaining to any particular commodity.

Section 2. Definitions

The following definitions apply to this regulation:

2.1. Product -- An article, commodity or substance that is manufactured, grown, harvested, mined or refined for sale.

2.2. Consumer Product – A product sold or offered for sale in packaged or bulk form which is intended for personal use in a home or residence

2.3. Non-Consumer Product -- A product sold or offered for sale which is intended for use by a business or institution customer for industrial use or wholesale distribution.

2.4. Online Marketplace – Any person or entity who operates an electronically accessed platform that includes features that allow for, facilitate, or enable sellers to engage in the sale, purchase, payment, storage, shipping or delivery of a product within the U.S., is used by sellers for such purposes, and has a contractual or similar relationship with its users governing their use of that platform to sell and purchase products.

2.5. E-commerce – The process of offering for sale, transacting sales, and delivery of consumer product(s) or non-consumer product(s) when the purchaser is not physically present at the point of purchase. E-commerce includes on-line sales made using websites and phone applications, catalog sales and sales transacted via online marketplaces by 3rd parties when the purchaser is not physically present.

2.6. E-commerce Product – A consumer product or non-consumer product offered for sale through e-commerce.

2.7. E-commerce Site – The site, program or interface through which customers make product purchases by means of e-commerce. An e-commerce site may be a manufacturer website, a retail website, an online marketplace, a delivery service site, a phone application or other interface in which the customer is physically not present to inspect and select products.

2.8. Customer – A person or entity purchasing an e-commerce product for their own use, the use of another person, or a business.

2.9 Person – The term "person" means either singular or plural and shall include any individual, partnership, company, corporation, association, or society engaged in e-commerce activity.

2.10. Package. – Except as excluded by Section 1, the term "package," whether standard package or random package, means any consumer product or non-consumer product which is:

(a) enclosed in a container or wrapped in any manner in advance of wholesale or retail sale; or

(b) whose weight, measure or count has been determined in advance of wholesale or retail sale.

2.11. E-commerce Package – Any consumer product or non-consumer product with a defined net quantity which is sold through e-commerce and is:

(a) enclosed in a container or wrapped in any manner in advance of on-line sale; or

(b) not enclosed prior to on-line sale and wrapped or packaged for shipment or delivery after sale, or

(c) not enclosed prior to on-line sale and does not require wrapping or packaging for delivery after sale.

2.12. E-commerce Standard Package – Any package sold or offered for sale via e-commerce where lots or shipments for delivery of the package of the same product have identical net content declarations.

2.13. E-commerce Random Package – Any package sold or offered for sale via e-commerce where lots or shipments for delivery of the package of the same product have varying net content declarations.

2.14. Sale from Bulk. – The term "sale from bulk" means the sale of products are not pre-packaged and where the quantity is determined at the time of sale.

2.15. E-commerce Bulk Product – A product sold or offered for sale via e-commerce where the product is not packaged at time of purchase. An e-commerce bulk product may or may not be wrapped upon its sale to facilitate shipment or delivery.

2.16. E-commerce Non-Consumer Package – Any non-consumer product that is sold or offered for sale which has been packaged prior to sale on an e-commerce site.

2.17. E-Commerce Package Label. – Any written, printed, or graphic matter affixed to, applied to, attached to, blown into, formed, molded into, embossed on, or contained within a package containing any consumer or non-consumer product for purposes of branding, identifying, or providing information with respect to the product or to the contents of the package.

2.18. E-commerce Receipt. -- A complete record of a transaction involving the purchase of one or more e-commerce products purchased at the same time from the same E-commerce site. E-commerce receipts may be either electronic or paper as described in this regulation.

2.19. SI or SI Units – SI or SI Units means the International System of Units as established in 1960 by the General Conference on Weights and Measures (CGPM) and interpreted or modified for the United States by the Secretary of Commerce

2.20. U.S. Customary Units – Units based upon the inch, foot, gallon, and the pound commonly used in the United States of America. US Customary units include units for weight, liquid measure, linear measure, area measure, volume measure and dry measure. The NIST Handbook 130 Uniform Packaging and Labeling Regulation details use of U.S. Customary units for consumer packages.

Section 3. Required Declarations for E-commerce Sites Offering Products for Sale

Consumer and Non-Consumer Products are being purchased through e-commerce sites whereby the customer makes purchase decisions based upon the product information provided on the website,

phone application or other remote means. Because customers make e-commerce purchase decisions based on available information provided on these sites or venues, customers should expect the information provided to be sufficiently complete in order to make informed purchase decisions and accurate value comparisons. To that end, certain price and FPLA-required label information shall be provided to purchasers on the E-commerce site where a product is offered for sale. The elements of the FPLA information required by this regulation are also present in regulations promulgated by other Federal agencies such as EPA, FTC and the Department of Agriculture.

3.1. E-commerce Site Requirements for Standard Packages. – The following shall apply to e-commerce sites on which standard packages are offered for sale:

(a) Declaration of Identity. – The product declaration of identity shall appear on the e-commerce site in a conspicuous and prominent location. Wherever applicable, the product brand name or manufacturer/distributor name shall be combined with the declaration of identity. This information shall be provided separately from and in addition to any picture or image of the product. See Section 7 for more detailed information.

(b) Declaration of Net Quantity. – The declaration of net quantity shall appear on the e-commerce site in a prominent location and in a conspicuous manner which clearly communicates the package net quantity. This information shall be provided separately from and in addition to any picture or image of the product. This information shall be provided in both U.S. customary and SI units for products subject to the Fair Packaging and Labeling Act or as mandated for products under other Federal regulations. See Section 6 for more detailed information.

(c) Product Price. – The price of the product shall appear on the e-commerce site in a conspicuous and prominent location. Added cost information (if any) for shipping, delivery, taxes, and other services shall be provided to the customer prior to the completion of check-out and payment.

(d) Product Photo or Visual Product Representation/Image. – The e-commerce site shall provide a photo or visual representation (image) of the product to help consumers confirm the identity of the item they intend to purchase. While a product photo or image may show certain required information, required information shall appear separately from the picture/representation. Any information provided in the picture/image shall not conflict with information required by this regulation. See Section 9 for more information.

(e) Brand Name or Product Manufacturer. – The e-commerce site shall provide the name of the manufacturer, distributor or the brand of any product offered for sale, where applicable. See Section 8 for more information.

3.2. E-commerce Site Requirements for Random Packages. – The following shall apply to e-commerce sites on which random packages are offered for sale:

(a) Declaration of Identity. – The product declaration of identity shall appear on the e-commerce site in a conspicuous and prominent location. Wherever applicable, the product brand name shall be combined with the declaration of identity. This information shall be provided separately from and in addition to any picture or image of the product. See Section 7 for more detailed information.

(b) Unit Price. – The unit price of the product shall appear on the e-commerce site in a conspicuous and prominent location. This information shall be provided separately from and in addition to any picture or image of the product. See Section 5 for more detailed information.

(c) Net Quantity Information. – For each product offered for sale in random packages, a range of potential product net quantities and an estimated maximum possible item net weight shall be displayed to customers on the e-commerce site in a conspicuous and prominent location. See Section 6 for more detailed information.

(d) Product Price – For each product offered for sale in random packages, a range of potential product prices and an estimated maximum possible item price shall be displayed to customers on the e-commerce site in a conspicuous and prominent location. Added cost information (if any) for shipping, delivery, taxes, and other services shall be provided to the customer prior to the completion of check-out and payment.

(e) Product Photo or Visual Product Representation/Image. – The e-commerce site shall provide a photo or representative image of the product to help customers confirm the identity of the item they intend to purchase. While a product photo or representation may depict certain required information, required information shall appear separately from the picture/representation. Any information provided in the picture/product representation shall not conflict with information required by this regulation. See Section 9 for more information.

(f) Brand Name or Product Manufacturer. – The e-commerce site shall provide the name of the manufacturer, distributor or the product brand name when it is different from the person or entity responsible for the website. See Section 8 for more information.

3.3. Bulk Product E-commerce Site Requirements. – The following shall apply to e-commerce sites on which products from bulk are offered for sale:

(a) Declaration of Identity. – The bulk product declaration of identity shall appear on the e-commerce site in a conspicuous and prominent location. Brand name (if applicable) may be combined with the declaration of identity. This information shall be provided separately from and in addition to any picture or image of the bulk product. See Section 7 for more detailed information.

(b) Unit Price. – The unit price of the product shall appear on the e-commerce site in a conspicuous and prominent location. This information should be provided separately from and in addition to any picture or image of the bulk product. See Section 5 for more detailed information.

(c) Net Quantity Information. – An estimated minimum and/or maximum possible product net quantity, if applicable to any product offered for sale from bulk, shall be provided on the e-commerce site in a conspicuous and prominent location. See Section 6 for more detailed information.

(d) Product Price – For products offered for sale limited to minimum and/or maximum per-order quantities, an estimated minimum or maximum possible product price, where applicable, shall be provided to the customer on the e-commerce site in a conspicuous and prominent

location. Added cost information (if any) for shipping, delivery, taxes, and other services shall be provided to the customer prior to the completion of check-out and payment.

(e) Product Photo or Product Representation. – The e-commerce site shall provide a photo or visual representation of the bulk product to help customers confirm the identity of the item they intend to purchase. While a product photo or representation may depict certain required information, required information shall appear separately from the picture/representation. Any information provided in the picture/product representation shall not conflict with information required by this regulation. See Section 9 for more information.

3.4. Non-Consumer Product E-commerce Site Requirements. – The following shall apply to e-commerce sites on which non-consumer products are offered for sale:

(a) Packaged Non-Consumer E-commerce Products. – If the non-consumer product is packaged as a standard package, the requirements of Section 3.1. E-commerce Site Requirements for Standard Packages shall apply. If the non-consumer product is packaged as a random package, the requirements of Section 3.2. E-commerce Site Requirements for Random Packages shall apply.

(b) E-commerce Products Purchased from Bulk. – If the non-consumer product is not packaged at the time of purchase, the requirements for Section 3.3. Bulk Product E-commerce Site Requirements shall apply.

Section 4. Required Information for E-commerce Products Upon Delivery.

4.1. Standard Package E-commerce Delivery Requirements. – The information below shall be provided within, upon or together with each standard package delivered to / received by a customer in an e-commerce transaction. Products which are labeled to be compliant with the UPLR meet the requirements for Declaration of Identity, Net Quantity and Responsibility. Products which are not labeled for retail sale as prescribed by the UPLR shall provide the following:

(a) Declaration of Identity. – The product declaration of identity shall be prominently placed on the product package or on a label which is physically attached to product package. Although the declaration of identity may also appear on a receipt or invoice, a receipt or invoice alone is not an adequate means to provide this information.

(b) Declaration of Net Quantity – The declaration of net quantity shall be prominently placed on the product or package or on a label which is physically attached to the product package. Although the declaration of net quantity may also appear on a receipt or invoice, a receipt by itself is not an adequate means to provide this information.

(c) Declaration of Responsibility. – The declaration of responsibility, including name and address, shall be prominently placed on the product package label.

(d) Product Price. – The total price of the product shall be provided to the customer, either on a receipt or invoice or by appearing upon, within, or with the delivered standard package.

4.2. Random Package E-commerce Delivery Requirements. – The following shall apply to the information provided within, upon, or together with each random package delivered to/received by a customer in an e-commerce transaction:

(a) Declaration of Identity. – The product declaration of identity shall be prominently placed on the product package or a label attached to the product package. Where multiple products are delivered concurrently, it shall be clear which information applies to each product. Although the declaration of identity may also appear on a receipt or invoice, a receipt or invoice alone is not an adequate means to provide this information.

(b) Unit Price. – The unit price of the product shall be provided to the customer, either on a receipt or invoice, on the package label, or by other written documentation included with the delivered product, and shall be in the same units of measure as displayed on the website.

(c) Net Quantity Information. – The net quantity of the product shall be prominently marked or displayed on the product or a label attached to the package and shall be in the same units of measure as displayed on the website. Where multiple products are delivered concurrently, it shall be clear which information applies to each product. Although the declaration of net quantity may also appear on a receipt or invoice, a receipt or invoice alone is not an adequate means to provide this information.

(d) Product Price. – The price charged for the product shall be prominently marked upon the product or be recorded and displayed on documentation within the package. Where multiple products are delivered concurrently, it shall be clear which information applies to each product. The product receipt shall provide the purchaser with cost information including the cost of the product and any applicable additional charges. Although the price information may also appear on a receipt or invoice, it shall also be provided as specified above with the product package.

(e) Declaration of Responsibility. – The declaration of responsibility, including name and address, shall be conspicuously and prominently marked upon the product or package or recorded and displayed on documentation within the package. Where multiple products are delivered concurrently, it shall be clear which information applies to each product. Although the declaration of responsibility may also appear on a receipt or invoice, a receipt or invoice alone is not an adequate means to provide this information.

4.3. Bulk Product E-commerce Delivery Requirements – The following shall apply to the information provided on or with bulk products delivered to / received by a customer in an e-commerce sale:

(a) Declaration of Identity. – The bulk product declaration of identity shall be provided to the customer on a transaction receipt. A Declaration of Identity may also be marked upon or on written documentation attached to the bulk product, but this does not preclude it from being displayed on the receipt.

(b) Unit Price. – The unit price of the product shall be provided to the customer on the transaction receipt. The Unit Price may also be displayed upon the product or its packaging, but this does not preclude it from being recorded on the receipt.

(c) Declaration of Net Quantity. – The actual net quantity of the product delivered shall be provided to the customer on the transaction receipt. Actual net quantity shall be documented for the transaction as the customer was not present when the product(s) was selected. The Declaration of Net Quantity may be displayed upon the product or its packaging, but this does not preclude it from being recorded on the receipt.

(d) Product Price. – The total price charged for the product shall be provided to the customer on the transaction receipt.

4.4. Non-consumer Product E-commerce Delivery Requirements. – The following shall apply to the information provided on or with a non-consumer product delivered to / received by a customer in an e-commerce sale:

(a) Packaged Non-Consumer E-commerce Products. – If the non-consumer product is packaged as a standard package, the requirements in Section 4.1. Standard Package E-commerce Delivery Requirements shall apply. If the non-consumer product is packaged as a random package, the requirements of Section 4.2. Random Package E-commerce Delivery Requirements shall apply.

(b) E-commerce Products Purchased from Bulk – If the non-consumer product is not packaged at the time of purchase, the requirements for Section 4.3. Bulk Product E-commerce Delivery Requirements shall apply.

Section 5. Unit Pricing Requirements on E-Commerce Sites for Products Offered for Sale

5.1. Products Subject to Unit Pricing on E-commerce Sites

(a) Unit Price Information is required for bulk products and random packages offered for sale on an e-commerce site.

(b) Unit Price Information is optional for standard packages offered for sale on e-commerce sites.

5.2 Required Unit Price Information

(a) The Unit Price shall be consistent with the required method of sale for the product.

(b) Units of Measure. - The declaration of the unit price of a particular commodity in all package sizes offered for sale on an e-commerce site shall be uniformly and consistently expressed in terms of:

(1) Price per kilogram or 100 g, or price per pound or ounce, if the net quantity of contents of the product is in terms of weight.

(2) Price per liter or 100 mL, or price per dry quart or dry pint, if the net quantity of contents of the product is in terms of dry measure or volume.

(3) Price per liter or 100 mL, or price per gallon, quart, pint, or fluid ounce, if the net quantity of contents of the product is in terms of liquid volume.

(4) Price per individual unit or multiple units if the net quantity of contents of the product is in terms of count.

(5) Price per square meter, square decimeter, or square centimeter, or price per square yard, square foot, or square inch, if the net quantity of contents of the product is in terms of area.

(6) Price per meter, decimeter, centimeter, or price per yard, foot, 100-foot, or inch if net quantity of contents of the product is in terms of length.

(c) Exemptions – The following exemptions from unit pricing requirements above are permitted:

(1) Small Packages. – Products shall be exempt from these provisions when packaged in quantities of less than 28 g (1 oz) or 29 mL (1 fl oz) or when the total retail price is 50 cents ($0.50) or less.

(2) Single Items. – Products shall be exempt from these provisions when only one brand in only one size is offered for sale in a particular retail establishment.

(3) Infant Formula. – For "infant formula," unit price information may be based on the reconstituted volume. "Infant formula" means a food that is represented for special dietary use solely as a food for infants by reason of its simulation of human milk or suitability as a complete or partial substitute for human milk.

(4) Variety and Combination Packages. – Variety and Combination Packages as defined in Section 2.9 and Section 2.10 in the Uniform Packaging and Labeling Regulation [Section XX *NOTE*] shall be exempt from these provisions.

Section XX NOTE: See "Uniform Packaging and Labeling Regulation

(d) E-commerce sites shall determine the most effective units for ensuring value comparison of similar products with varying product sizes.

(e) Unit Pricing Expressions shall be listed in the nearest cent when a dollar or more. If the unit price is under a dollar, it shall be listed to the tenth of a cent or the whole cent, but both methods cannot be used simultaneously. The e-commerce site shall accurately and consistently use the same method of rounding up or down to compute the unit price to the whole cent.

(f) The unit price information shall be presented adjacent to the product price information. When present, unit price information is to be provided in a manner so that it is adjacent to all other product pricing information.

Section 6. Declaration of Quantity– E-commerce Products

6.1. E-commerce Site Requirements – Any e-commerce package offered for sale on an e-commerce site shall be displayed or represented on the e-commerce site with a separate Declaration of Quantity statement which details the quantity of product that the package contains in metric (SI) and US Customary units of measure and/or in count consistent with the requirements for packages intended for retail sale prescribed in the Uniform Packaging and Labeling Regulation (See the current version of NIST Handbook 130 IV.A. Section 6 and Section 7 as applicable) or other existing Federal regulations for non-consumer products. The Declaration of Quantity shall be accurately displayed in relevant units to facilitate value comparison. The declaration shall not be misleading or deceptive.

6.2. E-commerce Package Requirements – E-commerce standard and random consumer packages and pre-packaged non-consumer packages upon delivery to customers shall have an accurate Declaration of Net Quantity on the package label.

6.3. E-commerce Bulk or Unpackaged Product Requirements – E-commerce bulk and non-consumer products which are not packaged prior to purchase, at the time of delivery to the customer, shall be accompanied by an accurate Declaration of Net Quantity on a printed transaction receipt.

This printed receipt shall include the product identity, unit price, net quantity, and actual charged price in a clear and non-misleading manner for all bulk or non-packaged products. Electronic receipts may be used in place of paper receipts if the information required for a paper receipt is printed upon or contained in each individual bulk and/or non-packaged product. Electronic receipts may be provided in place of printed receipts if the customer specifies an electronic receipt is preferred.

6.4. Measurement Systems:--The International System of Units (SI), known as the metric system and the U.S. customary system of weights and measures are recognized as proper systems to be used in the declaration of quantity for e-commerce products. Units of both systems may be combined in a dual declaration of quantity. Numerical count is permitted for products when the product statement of identity and numerical count are fully informative of the product's contents.

6.5. Largest Whole Common Unit. – This regulation requires that the quantity declaration for similar types and sizes of products be in terms of the largest whole common unit. With respect to a particular product offered for sale, the declaration shall be in terms of the largest common whole unit of weight or measure with any remainder expressed:

(a) SI Units. – in decimal fractions of such largest whole unit.

(b) U.S. Customary Units. –

(1) in common or decimal fractions of such largest whole unit; or

(2) where appropriate, the next smaller whole unit or units with any further remainder in terms of common or decimal fractions of the smallest unit present in the quantity declaration.

6.6. Terms: Weight, Liquid Measure, Dry Measure, or Count. – The declaration of the quantity of a particular E-commerce product shall be expressed in terms of liquid measure if the commodity is liquid, in terms of dry measure if the commodity is dry, in terms of weight if the commodity is solid, semisolid, viscous, or a mixture of solid and liquid, or in terms of numerical count. However, if there exists a firmly established general consumer usage and trade custom with respect to the terms used in expressing a declaration of quantity of a particular commodity, such declaration of quantity may be expressed in its traditional terms if such traditional declaration gives accurate and adequate information as to the quantity of the commodity.

6.7. SI Units: Mass and Measure. – A declaration of quantity for an e-commerce product or package shall be expressed in units according to the provisions of the Uniform Packaging and Labeling Regulation (UPLR) (See current version of NIST Handbook 130 IV.A. Sections 6.5 through 6.6.2.), the applicable Uniform Regulation for the Method of Sale of Commodities (See current version of NIST Handbook 130 IV.B. as applicable) or the applicable regulation(s) of another regulatory agency. Generally, declarations are to follow the requirements detailed below:

(a) in units of mass shall be in terms of the kilogram, gram, or milligram;

(b) in units of liquid measure shall be in terms of the liter or milliliter, and shall express the volume at 20 °C, except in the case of petroleum products or distilled spirits, for which the declaration shall express the volume at 15.6 °C, and except also in the case of a commodity that is normally sold and consumed while frozen, for which the declaration shall express the volume at the frozen temperature, and except also in the case of malt beverages or a

commodity that is normally sold in the refrigerated state, for which the declaration shall express the volume at 4 °C;

(c) in units of linear measure shall be in terms of the meter, centimeter, or millimeter;

(d) in units of area measure shall be in terms of the square meter, square decimeter, square centimeter or square millimeter;

(e) in units of volume other than liquid measure shall be in terms of the liter and milliliter, except that the terms cubic meter, cubic decimeter, and cubic centimeter will be used only when specifically designated as a method of sale;

(f) Shall be expressed in units so that the numerical declaration is greater than the number one "1" and less than number one thousand "1000". While a common unit is required for similar products of similar size, when the product size range results in numerical declarations which are less than one or exceed 1000, then added units are permitted.

Examples:

500 g, not 0.5 kg

1.96 kg, not 1960 g

750 mL, not 0.75 L

750 mm or 75 cm, not 0.75 m

(g) SI declarations should be shown in three digits except where the quantity is below 100 grams, milliliters, centimeters, square centimeters, or cubic centimeters where it can be shown in two digits. In either case, any final zero appearing to the right of the decimal point need not be shown; and the declaration of net quantity of contents shall not be expressed in mixed units.

Example:

1.5 kg, not 1 kg 500 g

(h) Only those symbols as detailed in NIST Handbook 130 UPLR Section 6.5. Largest Whole Common Unit may be employed in the quantity statement on an e-commerce site or on a product package.

6.8. U.S. Customary Units: Weight and Measure. – A declaration of quantity for an e-commerce product or package shall be expressed in units according to the provisions of the UPLR (See current version of NIST Handbook 130 IV.A. Sections 6.7. through 6.8.2.), the applicable Method of Sale Regulation (See current version of NIST Handbook 130 IV.B. as applicable). or the applicable regulation(s) of another regulatory agency. Generally, declarations are to follow the requirements detailed below

(a) in units of weight shall be in terms of the avoirdupois pound or ounce;

(b) in units of liquid measure shall be in terms of the United States gallon of 231 cubic inches or liquid quart, liquid pint, or fluid ounce subdivisions of the gallon and shall express the volume at 68 °F, except in the case of petroleum products or distilled spirits, for which the declaration shall express the volume at 60 °F, and except also in the case of a commodity that is normally

sold and consumed while frozen, for which the declaration shall express the volume at the frozen temperature, and except also in the case of a commodity that is normally sold in the refrigerated state, for which the declaration shall express the volume at 40 °F, and except also in the case of malt beverages, for which the declaration shall express the volume at 39.1 °F;

(c) in units of linear measure shall be in terms of the yard, foot, 100-foot, or inch;

(d) in units of area measure shall be in terms of the square yard, square foot, or square inch;

(e) in units of volume measure shall be in terms of the cubic yard, cubic foot, or cubic inch; and

(f) in units of dry measure, shall be in terms of the United States bushel of 2150.42 in^3, or peck, dry quart, and dry pint subdivisions of the bushel.

(g) Any generally accepted symbol and abbreviation of a unit name may be employed in the quantity statement on a package of commodity

Section 7. Declaration of Identity: E-commerce Products

7.1. E-commerce Site Requirements – Any e-commerce product offered for sale on an e-commerce site shall be represented or displayed on the e-commerce site with a separate Declaration of Identity statement which details the specific product that the package contains in ordinary terms expressed in the English language. The declaration of identity needs to be specific enough to distinguish between similar types and varieties of products. A manufacturer brand name is not a statement of identity. The declaration shall not be misleading or deceptive.

7.2. The identity declaration shall be in terms of:

(a) the name specified in or required by any applicable federal or state law or regulation or, in the absence of this;

(b) the common or usual name or, in the absence of this;

(c) the generic name or other appropriate description, including a statement of function (such as "cleaning powder").

(d) Manufacturer catalog number or part number may be provided in addition to 7.2(a), (b) or(c) if that number helps identify and distinguish products or commodities offered for sale.

7.3. E-Commerce Package Requirements – The same Declaration of Identity shall appear on the product label, on the product, attached to the product or within the product package in a clear and non-misleading fashion when delivered to the purchaser. The product declaration of identity shall be prominently placed on the product package or on a label which is physically attached to the product package. Although the declaration of identity may also appear on the receipt or invoice, a receipt or invoice alone is not an adequate means to provide this information for these packages.

Section 8. Declaration of Responsible Person: E-commerce Products

8.1. E-commerce Packages. – Any e-commerce package offered for sale on an e-commerce site which is not owned or operated by the person responsible for the manufacture, packaging, labeling or distributing of the e-commerce package shall specify conspicuously either 1) on the label of the e-

commerce package or 2) on documentation within the e-commerce package if there is no label, marking of the name and address of the product manufacturer, packer, or distributor. The name shall be the actual corporate name, or, when not incorporated, the name under which the business is conducted. The address shall include street address, city, state (or country if outside the United States), and ZIP Code (or the mailing code, if any, used in countries other than the United States); however, the street address may be omitted if it is listed in any readily accessible, well-known, widely published, and publicly available resource, including but not limited to a printed directory, electronic database, or website.

If a person manufactures, packs, or distributes a commodity at a place other than his principal place of business, the label may state the principal place of business in lieu of the actual place where the commodity was manufactured or packed or is to be distributed, unless such statement would be misleading. Where the commodity is not manufactured by the person whose name appears on the label, the name shall be qualified by a phrase that reveals the connection such person has with such commodity, such as "Manufactured for and packed by_____," "Distributed by_____," or any other wording of similar import that expresses the facts.

8.2. E-commerce Bulk Products and Select Random Packages. – All responsibility for bulk e-commerce products and e-commerce random packages bearing no Declaration of Responsible Person information shall be that of the person or entity responsible for the e-commerce site.

8.3. E-commerce Site Requirements. – The operator of an e-commerce site offering products for sale shall comply with at least one of the following requirements regarding each product offered for sale:

- **(a) The e-commerce site shall provide the name and address of the product manufacturer, packer or distributor.**
- **(b) The e-commerce site shall provide the name and website address of the product manufacturer, packer, or distributor.**
- **(c) The e-commerce site shall provide the product brand name or the name of the product manufacturer, distributor, or packer, when product manufacturer, distributor or packer address information is displayed on the package label at the time the product is delivered to the purchaser.**
- **(d) When the e-commerce site owner or operator is the also the product manufacturer, packer or distributor, the e-commerce site shall clearly and conspicuously display its name, address and contact information on both the e-commerce site and on the transaction receipt.**

Section 9. Product Photograph or Accurate Product Graphic Representation/Image: E-commerce Site Requirements

9.1. E-commerce Standard Packages. Any e-commerce package offered for sale on an e-commerce site shall be represented on the site with a current photograph of the package offered for sale. As an alternative, a detailed and accurate photographic depiction or representation of the package may be displayed. This picture or graphical representation shall be sufficiently sized, detailed and clear to enable the customer to distinguish this package or product from similar packages including varying sizes, varieties and product functions. When a consumer can customize an e-commerce package, a photographic representation of the customized product can be provided in addition to the required pre-customized product.

9.2. E-commerce Random Packages. – E-commerce random products offered for sale on an e-commerce site shall be accompanied on the site by a representative picture or photographic depiction of product (packaged or unpackaged) which is being offered for sale. This picture or photographic depiction shall be sufficiently sized, detailed, and clear to enable the customer to see the product and the pictured item shall be representative of the product being offered for sale. When a consumer can customize an e-commerce random package, a photographic representation of the customized product can be provided in addition to the required pre-customized product.

9.3. E-commerce Bulk Products and Select Random Packages. – Bulk products offered for sale on an E-commerce site shall be accompanied on the site by a representative picture or photographic depiction of the unpackaged product which is being offered for sale. Products packaged in random packages shall be displayed on the site with a representative depiction of a representative package, a clear and conspicuous statement explaining that packaged products are of random quantity, and instructions to customers regarding the means to specify a maximum or minimum package quantity in ordering and purchasing the product. The picture(s) or photographic depiction(s) shall be sufficiently sized, detailed, and clear to enable the customer to see the product and the pictured item shall be representative of the product being offered for sale. When a consumer can customize bulk or random package, a photographic representation of the customized product can be provided in addition to the required pre-customized product.

9.4. E-commerce Non-Consumer Packages. – Non-consumer products offered for sale on an e-commerce site shall be accompanied on the site by a representative picture or photographic depiction of the product which is being offered for sale. This picture or photographic depictions shall be sufficiently sized, detailed, and clear to enable the customer to see the product and the pictured item shall be representative of the product being offered for sale. When a consumer can customize an non-consumer package, a photographic representation of the customized product can be provided in addition to the required pre-customized product.

9.5. Pictures on Receipts: Transaction receipts are not required to provide pictures or photographic depictions

Section 10. Prominence and Placement of Required Information on E-commerce Sites: Offering E-commerce Products for Sale

10.1. General Requirements. – All information required to appear on the e-commerce site which offers products for sale shall appear thereon in the English language and shall be prominent, definite, plain, and conspicuous as to size and style of letters and numbers and as to color of letters and numbers in contrast to color of background. Any required information that is either in hand lettering or hand script shall be entirely clear and equal to printing in legibility.

(a) Location. – The required e-commerce site declarations below shall be present in the top 50% the screen in which the product is offered for sale:

(1) identity,

(2) net quantity,

(3) product price,

(4) brand or manufacturer name and

(5) package picture or photographic representation/depiction.

(b) Style of Type or Lettering – The required e-commerce site declarations shall be in such a style of type or lettering as to be boldly, clearly, and conspicuously presented with respect to other type, lettering, or graphic material on the screen.

(c) Color Contrast. – The required e-commerce site declarations shall be in a color that contrasts conspicuously with its background.

(d) Package Picture or Photographic Representation. – The product picture or photographic depiction shall be in the actual colors of the package or product. Slight variations in color shading are acceptable.

10.2. Combined Declarations of Required Information. – One or more of the required e-commerce site declarations can be combined if the resulting statement is clear and not misleading. This shall not apply to product photograph or photographic representation. Combined declarations shall be of a consistent size same size and font, excepting the product price which may be in a larger size and a different font.

(a) Combined Declarations of Required Information – The declarations of identity, net quantity, product price and/or brand or manufacturer name can be combined into a single statement on an e-commerce site provided the information is clear and not misleading. A combined statement may appear on a single line or multiple lines as illustrated below:

Examples:

1 kg (2.2 LB) Brand X Laundry Detergent $4.99
Brand X
Laundry Detergent
1 kg (2.2 LB)
$4.99

(b) Free Area – The area surrounding a required individual or a combined declaration on an e-commerce site shall be free of printed information:

(1) above and below, by a space equal to at least the height of the lettering in the declaration; and

(2) to the left and right, by a space at least equal to twice the width of the letter "N" of the style and size of type

Section 11. Prominence and Placement: Delivered E-commerce Packages, Products and Receipts

11.1. General Requirements – All information required to appear on an e-commerce package, product, or receipt shall appear thereon in the English language and shall be prominent, definite, plain, and conspicuous as to size and style of letters and numbers and as to color of letters and numbers in contrast to color of background. Any required information that is either in hand lettering or hand script shall be entirely clear and equal to printing in legibility.

11.2. Packages Intended for Sale in Retail Locations–A package properly labeled to comply with the retail shelf requirements of the UPLR will also comply with the e-commerce package label requirement.

11.3. Orientation of Required Declarations. – The required declarations on packages, products, or receipts shall be presented in such a manner as to be generally consistent to the orientation of the label or package.

Section 12. Effective Date

This regulation shall become effective 18 months after adoption.

NIST OWM Detailed Technical Analysis:

OWM recommends that the Committee request that PALS develop a strategy to reach out to other stakeholders. OWM recommends that the following organizations and others be invited to participate in the development of this proposed regulation and to provide feedback:

- Federal Agencies (especially FTC and FDA)
- Major E-commerce retailers (Amazon, Etsy, Walmart, Target, Home Depot)
- Smaller E-commerce retailers (E-Bay)
- Trade Associations (Consumers Brands Association, Food Industry Association, National Retail Federation, Retail Industry Leaders Association [RILA])
- Consumer Groups (Consumer Reports, National Consumers League)

OWM published a Federal Register Notice (FRN) requesting comments about the proposed rule for the and included E-commerce. OWM will assist PALS in these outreach efforts above upon request.

- OWM agrees that greater stakeholder outreach is needed and should continue. OWM will assist PALS in reaching out to stakeholders once they are determined by PALS.

- OWM provided numerous formatting changes in its analysis to align the regulation with Handbook 130 formatting. OWM will work with PALS to identify these changes and to recommend corrections.

- This extensive proposed model regulation has heard very little input or comment from NCWM membership. We encourage membership to give this proposed regulation a critical review.

OWM has identified additional opportunities for PALS to consider, that will assist stakeholders in achieving compliance of an e-commerce regulation.

- OWM recommends that PALS consider developing a presentation which illustrates how to apply the requirements to a mockup of different e-commerce websites. Which should include graphical illustrations in showing how the requirements are applied. This would assist readers to understand this proposal as it moves forward for adoption. Later these graphics could be used as a training webinar to assist weights and measures administrators and inspectors as to how to implement an enforcement program. The presentation could also be modified for use as an educational webinar for designers and developers of e-commerce websites.

- OWM supports the PALS proposal to develop a "best practices" guide for web designers and developers.

- OWM also recommends PALS develop an Examination Procedure Outline (EPO) similar to the EPO for Price Verification. This would provide administrators and inspectors with detailed guidance on application of the regulation. This would allow for illustrations and examples of acceptable presentations and formats of required information. It may be worthwhile for States to start performing mock inspections of specific types of websites during the development of the regulation. This would allow for both the regulation and EPO to be developed simultaneously, and lessons learned in the mock inspections can be used to refine the regulation and answers any questions that arise. The primary reason for this proposal is to provide the states with a regulation that can be uniformly enforced across all websites. It is essential to provide uniformity so that you do not have a website owner told by one state to present information in a specific fashion, only to have a different state (or even the same state) reject the website.

Summary of Discussions and Actions:

The Committee gave an Assigned status to this item at the 2022 NCWM Interim Meeting and believes that more outreach to online retailers is needed. The Committee is uncertain that the impacted industry has had an opportunity to review and engage in the process.

The Committee also considered adding an effective date to the proposal to address this concern but determined it would be better for PALS to reach out to retailers first and then consider the need for an effective date based on the feedback received.

The Committee replaced the original proposal with new language provided by PALS on January 9, 2022. The new language also includes a new section, "Section 11. Powers and Duties of the Director." A modification to the Weights and Measures Law, Section 11. Powers and Duties was added to the original proposal, but in accordance with NCWM policies, the Chairman of the PALS was informed it must be submitted on a NCWM Form 15 to be considered. It was not considered with this item but, if submitted on a NCWM Form 15 it will be considered as a separate item.

Additional recommendations include:

- Reach out to all stakeholders including online retailers, producers, consumer groups, trade associations, and engage them in the PALS work.

- Consider comments submitted in January by NIST OWM to the PALS Chairman and L&R Committee.

- Reach out to other federal agencies with authority to regulate online retailers.

- Broaden the definition of current section 2.12. E-commerce Consumer Commodity.

- Conduct mock inspections of these e-commerce websites to help develop the item.

- Prepare a presentation which illustrates how to apply the requirements.

- Consider making the suggested amendments to Section 5 "Unit Pricing Requirements for Products Offered for Sale on an E-commerce Site" outlined in the OWM analysis supporting documentation. (This was addressed by PALS in the 2022 Item Under Consideration.)

- Develop an EPO, develop a best practice guide for web design, develop a presentation on how to apply the requirements for E-commerce websites and add a section for unit pricing requirements.

- Consider adding an effective date to provide sufficient time for online retailers to prepare for regulation.

At the 2022 NCWM Annual Meeting, Chairman Guay provided the Committee remarked that the primary challenges for the e-commerce proposal relate to maximizing its review prior to adoption and where and how it should be published upon completion. Many expect that reaching Informational status on the agenda will promote discussion of the item by encouraging businesses and consumers to speak at NCWM and regional meetings, educating the membership on e-commerce and building greater confidence in the proposal. Prior to Informational status, PALS will initiate outreach and encourage feedback prior to the 2023 NCWM Interim Meeting. PALS is also debating as to how the e-commerce proposal should be published; as NCWM standard published by NCWM, a standard published in NIST Handbook 130, or published as an NCWM Guidance/Recommended Practice Document once that mechanism is established by NCWM.

Regional Association Reporting:

Western Weights and Measures Association

At the 2021 WWMA Annual Meeting, PALS Chair Guay gave a presentation on this item and recommended this be Developing. Mr. Kurt Floren (Los Angeles County, California) pointed out several editorial changes, and suggested that this be a Voting Item. Mr. Kevin Schnepp (CDFA-DMS) also suggested editorial changes. Ms. Lisa Warfield (NIST OWM) recommended that PALS reach out to other stakeholders. She also suggested that a broader definition of section 2.12:

> "**any commodity offered or exposed for sale by weight, measure or count from bulk or in packaged form**.".

Ms. Warfield also suggested mock inspections of these e-commerce websites to help develop the item and recommends that PALS consider developing a presentation which illustrates how to apply the requirements to a mockup of different e-commerce websites.

The Committee recommends that this Item be Assigned to the PALS Subcommittee. The Committee recommends that PALS develop a proposed amendment to Section 12 "Powers and Duties of the Director" in the Uniform Weights and Measures Law to authorize the Director to adopt regulations that encompass the various aspects necessary to ensure e-commerce websites and other regulated sales outlets comply with legal metrology requirements. The Committee also recommends that PALS consider making the suggested amendments to Section 5 "Unit Pricing Requirements for Products Offered for Sale on an E-commerce Site" outlined in the OWM analysis supporting documentation. The Committee recommends that PALS provides stakeholder outreach to Federal agencies, major e-commerce retailers, smaller e-commerce retailers, trade associations and consumer groups. The Committee also recommends that PALS consider Ms. Warfield's comments to develop material for e-commerce websites and conduct practical applications of the regulation, to develop a presentation which illustrates how to apply the requirements to different e-commerce websites.

At the 2022 WWMA Annual Meeting, L&R Committee did not solicit comments on this item, and recommends this item continues as assigned to the PALS.

Central Weights and Measures Association

At the 2021 CWMA Interim Meeting, PALS Chair Guay commented that this is a new effort that was originally intended as a guidance document but has evolved into a stand-alone model regulation. He reviewed the main components of the proposed language. PALS recommends this item move to Informational status for further input. Ms. Warfield commented recommended that PALS develop a strategy to reach out to stakeholders and invite them to participate in the development of this item. She asks the Committee to consider the NIST analysis for this item which was submitted to NCWM and CWMA L&R Committee members. The Committee recommends this item be given informational status for stakeholder input.

At the 2022 CWMA Annual, Chair Guay commented that the item is fully developed, and he believed the item needs to be reclassified as Informational because the item has Assigned status and no one from industry has been able to comment on it during open hearings. Mr. Charlie Stutesman (Kansas) commented that he believes the item should be escalated as a Voting Item so it can be discussed and vetted throughout the fall regional meetings. Chair Guay commented that he believes the item should be made Informational rather than Voting because there has not been the opportunity for companies to come forward and speak to the model regulation.

The Committee recommends this item be classified as an Informational Item to allow input from industry, particularly during open hearings.

At the 2022 CWMA Interim Meeting, PALS Chair Guay commented the version included in the L&R agenda is the current version. Any revisions from the four regions will be made and will be available in Publication 15 prior to the 2023 NCWM Interim Meeting. He reviewed the changes that had been made since the last version of the item including new definitions, table of contents, and proposed effective dates. Mr. Guay believes the item has been fully developed and pending any substantive changes from the regions it is ready for Voting status. Mr. Craig VanBuren (Michigan) commented he supports the item moving forward as a Voting Item and supports its content. Mr. Doug Musick (Kansas) supports the item, but he isn't sure there should be a distinction between larger and smaller companies for an implementation date. Mr. Ivan Hankins (Iowa), Mr. VanBuren, and Mr. Doug Rathbun (Illinois) support the item moving forward with Voting status. The Committee believes this item is fully developed and should be given Informational status for industry to have ample opportunity to provide input.

Southern Weights and Measures Association

At the 2021 SWMA Annual Meeting, PALS Chair Guay gave a presentation of the work done by the group. Dr. Matthew Curran (Florida) commented on the need for these regulations for accountability and enforcement. NIST OWM provided written analysis that suggested this item be Developing and recommended reaching out to other stakeholders, amend the powers and duties of State Directors, develop an EPO, develop a best practice guide for web design, develop a presentation on how to apply the requirements for e-commerce websites, and add a section for unit pricing requirements.

The Committee recommends this item be Assigned to PALS for further development using the guidance from NIST OWM written analysis.

At the 2022 SWMA Annual Meeting, no comments were heard, submitter was not available. The Committee recommends this item remain Assigned.

Northeastern Weights and Measures Association

At the 2021 NEWMA Interim Meeting, PALS Chair Guay commented that this item was originally developed as a guidance document rather than model language for regulation. As the work has progressed on this item and the demand in the marketplace continues to grow, it has become apparent there needs to be model regulation for e-commerce. Mr. Guay commented that PALS has fully developed the Item and welcomes comments from the regions. Mr. Mike Sikula (New York) recommends this item move forward as an Informational Item to allow industry members time to vet and to attend future meetings and comment on the model language. Mr. David Sefcik (NIST OWM) reviewed the NIST analysis comments and stated that a copy has been provided to PALS for review. Mrs. Cheryl Ayer (New Hampshire) expressed her appreciation to PALS and supports the item moving forward. Mr. John McGuire (New Jersey) expressed his appreciation to Mr. Guay for his long and hard work on this item. He concurs the item should move forward with Informational status. The Committee recommends this item move forward with Informational status.

At the 2022 NEWMA Annual Meeting, Mr. McGuire (Acting L&R NEWMA Chair and New Jersey) noted that NCWM website has new information posted on this item under the NCWM L&R supporting documents. He has yet to review the material to determine what changes, if any, were made. Mr. Sefcik stated that NIST OWM supports the work being done by PALS. Mr. Jason Flint (New Jersey) stated that Section 5.2., Unit Pricing should be mandatory not voluntary. NEWMA L&R Committee recommends this item continue to be Assigned to PALS. NEWMA L&R requests that PALS revisit or re-review and discuss whether Unit Pricing should be mandatory or voluntary.

At the 2022 NEWMA Interim Meeting, no comments were heard. The Committee recommends the item remain Assigned.

OTH-07.1 D Fuels and Lubricants Subcommittee

Source: NCWM Fuels and Lubricants Subcommittee (FALS)

Submitter's Purpose and Justification:

For more information or to provide comment, please contact the FALS Chair:

Ms. Vanessa Benchea
Florida Nevada Department of Agriculture and Consumer Services / Division of Consumer Services
(813) 868-8263, **Vanessa.Benchea@fdacs.gov**

Provide an update of the activities of this Subcommittee which works on direction from and reports to the L&R Committee. The mission of FALS is to assist the L&R Committee in the development of agenda items that affect Handbook 130, Uniform Fuels and Automotive Lubricants Inspection Law and Uniform Fuels and Automotive Lubricants Regulation. The Subcommittee consists of regulators and associate members who have subject matter expertise in fuels and lubricants. The Subcommittee will be called upon to aid in the development, provide guidance, and help establish NCWM position on items concerning fuels and lubricants.

Summary of Discussions and Actions:

This item is to provide a report on the activities of the Fuels and Lubricants Subcommittee (FALS) which reports and provides recommendations to the Laws and Regulations Committee.

FALS met on Sunday, January 9, 2022, at the 2022 NCWM Interim Meeting in a hybrid fashion, with attendees both in-person and via zoom at the 2022 NCWM Interim Meeting in Tampa, Florida, to review items related to fuel and automotive fluid standards that appear on the L&R agenda. FALS discussed the Item Block 6 that has been assigned to the FALS, with a report and comments from members of the Focus Group working on the block. There was also discussion of one item block that had been submitted by FALS following the Annual Meeting in July, and of two items of interest to the Subcommittee. Finally, two issues were raised as New Business. Those issues and the existing Focus Group will be discussed below.

FALS met on Sunday, July 10, 2022, at the 2022 NCWM Annual Meeting to review items related to fuel and automotive fluid standards that appear on the L&R Agenda. FALS discussed Item Block 6 Transmission Fluid, which has been assigned to the Focus Group (FG), with a brief update and comments from members of the FG. This is discussed in more detail below. There were also brief discussions of Item Block 4 EPA CFR Reference Updates, which had been submitted by FALS, as well as MOS-22.5 Section 2.31.2.1. Labeling of Grade Required and 2.31.2.2. EPA Requirements Also Apply, an item concerning biodiesel labeling that is of interest to the Subcommittee. Finally, two issues initially discussed during the FALS meeting at the 2022 Interim Meeting were discussed.

Item Block 6 Transmission Fluid Focus Group (B6: MOS-21.1. Section 2.36.2. Labeling and Identification of Transmission Fluid and B6: FLR-21.2. Section 3.14.1. Labeling and Identification of Transmission Fluid): The Focus Group was originally formed because while the model regulation in NIST Handbook 130 is sufficient, there is no licensing system for transmission fluid as there is with engine oils. Chair Striejewske read an update from FG Chair Johnson (Automotive Oil Change Association), as she was not able to attend the Annual Meeting. In summary, the FG has reached agreement that (1) designating transmission fluid "obsolete" is impractical for a variety of reasons, including lack of a comprehensive and consistent standards setting organization mechanism, and therefore the original amendment approach should no longer be pursued; and (2) that they should switch focus to developing other potential consumer protection language for labels. The latter, for instance, may involve exploring general references to checking one's owner's manual for transmission fluid recommendations. This summary was supported by FG members who were in attendance at the FALS meeting.

NIST Recommendation for Citing Federal Regulations: During the New Business portion of the FALS agenda, Ms. Warfield (NIST OWM) brought up a recommendation from the NIST OWM L&R Analysis, a supporting document for the Fall, 2021 regional meetings and was included on the NCWM Publication 15 web page under "Additional Letters, Presentations, and Data" for the L&R Committee. Ms. Warfield suggested formalizing citations from federal language to include the full title with the CFR number to increase clarity for the reader. There was some discussion during the FALS meeting, but as many were not familiar with the document or the recommendation, this will be discussed further later.

Request for Assistance Crafting a Form 15: Mr. Allan Morrison (California) mentioned that ASTM has completed an updated specification on CNG and LPG (ASTM D8080 Standard Specification for Compressed Natural Gas (CNG) and Liquefied Natural Gas (LNG) (Used as a Motor Vehicle Fuel) and was hoping for assistance in getting these updates into NIST HB 130. There was some discussion and offers to assist Mr. Morrison prepare one or more Form 15's for the next cycle.

The Committee heard comments from Mr. Corr on Items MOS-22.1 and FLR-22.1 and recommends FALS review and address these concerns within NIST HB130. These comments have been provided to the Chair of FALS for consideration.

Additionally, the Committee recommends that FALS review all EPA and FTC title citations throughout NIST HB 130.

Regional Association Reporting:

Western Weights and Measures Association

At the 2022 WWMA Annual Meeting they thanked FALS for their report.

Central Measures Association

At the 2022 CWMA Interim Meeting, Mr. Mike Harrington (Iowa and FALS member) commented there hasn't been any activity since the Annual Meeting. The new FALS chairperson is Mrs. Vanessa Benchea (Florida).

OTH-11.1 D Packaging and Labeling Subcommittee

Source: NCWM Packaging and Labeling Subcommittee (PALS)

Submitter's Purpose and Justification:

Provide an update of the activities of this Subcommittee which reports to the L&R Committee. The mission of PALS is to assist the L&R Committee in the development of agenda item, NCWM positions and new standards related to packaging and labeling. The Subcommittee will also be called upon to provide important and much needed guidance to the regulatory and consumer packaging communities on difficult questions. PALS will report to NCWM L&R Committee. The Subcommittee is comprised of a Chair, eight voting members, and anyone interested in packaging and labeling standards.

This item is to provide a report on the activities of the PALS which reports and provides recommendations to the Laws and Regulations Committee.

Summary of Discussions and Actions:

At the 2020 NCWM Interim Meeting, PALS Chair Guay reported that PALS is continuing to draft a proposed regulation and accompanying "Best Practice" document regarding products sold via e-commerce. The focus of this document is to help provide more clarity on the information necessary for consumers to make informed product choices on-line and for consumers to confirm receipt of the products ordered. PALS currently believes certain information is better included in a regulation while other information is better provided as guidance or Best Practice document. PALS will work on development of this proposed regulation and proposed guidance in the spring of 2020 with a target to have a draft proposal prepared by the 2020 NCWM Annual meeting. Separately, PALS believes the text of "Recommended Best Practice" for quantity expressions is complete. PALS is developing an illustrative appendix with graphics support being provided by the NCWM office. PALS is planning to have the "Recommended Best Practice" Document for quantity related expressions appearing on a principal display panel and the proper declaration of net quantity completed by the summer of 2021. The document has been completed and the work continues as an illustrative appendix.

PALS reviewed the framework for a proposed NIST Handbook 130 regulation regarding products sold through e-commerce. This regulation would focus on ensuring buyers have sufficient information to make an accurate product selection and value comparison at the time of purchase, while also ensuing the buyer can confirm the product purchased is the product they receive. PALS plans to make this proposal its priority for 2021.

At the 2021 NCWM Annual Meeting, PALS reviewed a developing draft regulation pertaining to websites which offer products for sale through e-commerce, and to products which are sold and delivered because of an e-commerce purchase. PALS received comments from those in attendance at the PALS work session and they believe the next step should be to forward this proposal to regions for broader stakeholder review and comment. PALS plans to submit a proposal for this item to obtain comments at the 2021 Fall Regional Association Meetings.

At the NCWM 2022 Annual Meeting, the Committee heard from PALS Chair Guay who gave an overview on the plan to address the recommendations the Committee made at the 2022 Interim Meeting. The Weights and Measures Law, Section 11. Powers and Duties was added to the original proposal, but in accordance with NCWM policies, PALS was informed it must be submitted on a NCWM Form 15 to be considered.

Regional Association Reporting:

Central Weights and Measures Association

At the 2022 CWMA Interim Meeting, PALS Chair Guay commented PALS has been working to establish consistency between the handbooks and the FPLA. PALS is providing comments to federal agencies when and where appropriate.

Item Block 1 (B1) Renewable Diesel and Diesel

B1: MOS-23.1 Sections 2.23. Biodiesel and biodiesel Blends that Contain Greater Than or Equal to 21% by Volume Biodiesel. and 2.40. Diesel Fuel.

B1: FLR-23.1 Sections 1.9. Biodiesel Blend., 1.27. Fuel Oil., 1.XX. Renewable Diesel., 3.3.2. Automotive Fuel Rating., 3.15. Biodiesel and Biodiesel Blends Containing Greater than 20% by Volume Biodiesel.

Source: CC Consulting, LLC

Submitter's Purpose and Justification:

Further refine and provide clarity to the changes related to biodiesel made at the 2022 NCWM Annual meeting. This proposal also includes needed updates related to renewable diesel. The proposal also includes important information related to renewable diesel. The submitter recognizes that some may think no changes are needed.

OWM Executive Summary for Item Block 1 (B1)– Renewable Diesel and Diesel
OWM Recommendation: • The title should read Section 2.31 not Section 2.23

Table 3. Summary of Recommendations							
Item Block 1 (B1)– Renewable Diesel and Diesel							
	V	**D**	**W**	**A**	**I**	**Note***	**Comments**
Submitter							
OWM							
CWMA							
WWMA		✓					
SWMA		✓					
NEWMA				✓			
NCWM							

***Notes Key:**
1 – Submitted modified language
2 – Item not discussed
3 – No meeting held
4 – Not submitted on agenda
5 – No recommendation or not considered

Item Under Consideration:

Amend Handbook 130, Uniform Regulation for the Method of Sale of Commodities as follows:

2.31. Biodiesel and Biodiesel Blends <u>that contain greater than or equal to 21 % by volume biodiesel</u>.

2.31.1. Identification of Product. – Biodiesel shall be identified by the term "Biodiesel" with the designation "B100." ~~**Biodiesel**~~ Blends **<u>that contain greater than 20 % by volume biodiesel</u>** shall be identified by the term "Biodiesel Blend."

2.31.2. Labeling of Retail Dispensers.

2.31.2.1. Labeling of Grade Required. – Biodiesel and biodiesel blends **<u>that contain greater than 20 % by volume biodiesel</u>** shall be identified in accordance with both EPA and FTC requirements.

~~**2.31.2.2. Automotive Fuel Rating. Biodiesel and biodiesel blends shall be labeled with its automotive fuel rating in accordance with 16 CFR 306.**~~

2.31.2.3. Biodiesel Blends. – When biodiesel blends greater than 20 % by volume are offered by sale, each side of the dispenser where fuel can be delivered shall have a label conspicuously placed that states "Consult Vehicle Manufacturer Fuel Recommendations." The lettering of this legend shall not be less than 6 mm (1/4 in) in height by 0.8 mm ($^{1}/_{32}$ in) stroke; block style letters and the color shall be in definite contrast to the background color to which it is applied.

2.31.3. Documentation for Dispenser Labeling Purposes. – The retailer shall be provided, at the time of delivery of the fuel, a declaration of the volume percent biodiesel on an invoice, bill of lading, shipping paper, or other document. This documentation is for dispenser labeling purposes

only; it is the responsibility of any potential blender to determine the amount of biodiesel in the diesel fuel prior to blending.

~~**2.31.4. Exemption.** – Biodiesel blends that contain less than or equal to 5 % biodiesel by volume are exempt from the requirements of Sections 2.31.1. Identification of Product, 2.31.2. Labeling of Retail Dispensers, and 2.31.3. Documentation for Dispenser Labeling Purposes when it is sold as diesel fuel.~~

(Added 2008) (Amended 2022**, and 20XX**)

2.40. Diesel Fuel. – Shall meet the following requirements, based on the biodiesel concentration of the fuel:

(a) Diesel fuel that contains less than or equal to 5 % by volume biodiesel shall meet the latest version of ASTM D975, "Standard Specifications for Diesel Fuels" and shall be sold as diesel fuel.

(b) Diesel fuel that contains greater than or equal to 6 % by volume biodiesel and that contains less than or equal to 20 % by volume shall meet the latest version of ASTM D7467, "Standard Specifications for Diesel Fuel Oil, Biodiesel Blend (B6 to B20)."

(c) Only fuel additive registered with the U.S. EPA may be used to additize diesel fuel, and the final product shall meet the latest version of ASTM D975 and/or ASTM D7467.

2.40.1. Premium Diesel Fuel. – All diesel fuels identified on retail dispensers as premium, super, supreme, or premier must conform to the following minimum requirements.

(a) **Cetane Number.** – A minimum cetane number of 47.0 as determined by the latest version of ASTM D613, "Standard Test Method for Cetane Number of Diesel Fuel Oil."

NOTE: ASTM D613, "Standard Test Method for Cetane Number of Diesel Fuel Oil" is the referee method; however, the following methods can be used to determine cetane number: the latest version of ASTM D6890, "Standard Test Method for Determination of Ignition Delay and Derived Cetane Number" (DCN) of Diesel Fuel Oils by Combustion in a Constant Volume Chamber"; and ASTM D7668, "Standard Test Method for Determination of Derived Cetane Number (DCN) of Diesel Fuel Oils–Ignition Delay and Combustion Delay Using a Constant Volume Combustion Chamber Method."

(b) **Low Temperature Operability.** – A cold flow performance measurement which meets the latest version of ASTM D975, "Standard Specification for Diesel Fuel," tenth percentile minimum ambient air temperature charts and maps by the latest version of either ASTM D2500, "Standard Test Method for Cloud Point of Petroleum Products and Liquid Fuels" or ASTM Standard D4539, "Standard Test Method for Filterability of Diesel Fuels by Low-Temperature Flow Test (LTFT)." The latest version of ASTM D6371, "Standard Test Method for Cold Filter Plugging Point of Diesel and Heating Fuels" may be used when the test results are a maximum of 6 °C below the Cloud Point. Low temperature operability is only applicable October 1 to March 31 of each year.

(c) **Lubricity.** – A maximum wear scar diameter of 460 micrometers as determined by the latest version ASTM D6079, "Standard Test Method for Evaluating Lubricity of Diesel Fuels by the High-Frequency Reciprocating Rig (HFRR)."

NOTE: The latest version of ASTM D6079, "Standard Test Method for Evaluating Lubricity of Diesel Fuels by the High-Frequency Reciprocating Rig (HFRR)" is the referee method; however, the latest version of ASTM D7688, "Standard Test Method for Evaluating Lubricity of Diesel Fuels by the High-Frequency Reciprocating Rig (HFRR) by Visual Observation" can be used.

(d) **Corrosion.** – A minimum rating of B+ as determined by the most recent version of NACE TM0172, "Determining Corrosive Properties of Cargoes in Petroleum Product Pipelines."

NOTE: The latest recent version of NACE TM0172 "Determining Corrosive Properties of Cargoes in Petroleum Product Pipelines" is the referee method. The latest version of ASTM D7548 "Standard Test Method for Determination of Accelerated Iron Corrosion in Petroleum Products" can be used.

(e) **Filter Blocking Tendency (FBT)** – A maximum of 2.2 by the latest version of ASTM D2068, "Standard Test Method for Determining Filter Blocking Tendency", following procedure B.

(f) **Injector Deposit Control.** – Maximum power loss in keep-clean mode of 2 % by the latest version of Coordinating European Council, CEC F-98-08, "Direct Injection, Common Rail Diesel Engine Nozzle Coking Test."

2.40.2. Use of Other Diesel Terminology. – For any terms other than premium, super, supreme, or premier included in the diesel fuel product or grade name and/or advertisements and claims displayed on dispensers, pump toppers, pole signs and bollard signs which imply improved performance, the product must have a clearly-defined fuel property with a substantiated functional benefit. Such property must be measurable utilizing industry accepted test methodologies developed by recognized standards organizations such as ASTM, SAE, and CEC to allow verification of the improved performance.

2.40.3 Labeling requirements – Diesel fuel containing more than 5 % by volume of biodiesel or more than 5 % by volume of renewable diesel shall be identified in accordance with both EPA and FTC requirements.

(Added 2021) **(Amended 20XX)**

B1: FLR-23.1 **Sections 1.9. Biodiesel Blend., 1.27. Fuel Oil., 1.XX. Renewable Diesel., 3.3.2. Automotive Fuel Rating., 3.15. Biodiesel and Biodiesel Blends Containing Greater than 20% by Volume Biodiesel.,**

Item Under Consideration:

Amend the Uniform Fuels and Automotive Lubricants Regulation as follows:

Section 1. Definition

1.8. Biodiesel. – A fuel comprised of at least 99 % by volume mono-alkyl esters of long chain fatty acids derived from vegetable oils or animal fats, designated B100 or B99.

(Amended 2018)

1.9. Biodiesel Blend. – A fuel comprised of a blend of biodiesel with hydrocarbon diesel fuel **and containing greater than 20 % by volume biodiesel**.

(Amended 2018**, and 20XX**)

1.15. Diesel Fuel. – A refined hydrocarbon suitable for use as a fuel in a compression-ignition (diesel) internal combustion engine that may contain a combination of biodiesel, renewable diesel, and fuel additives.

(Amended 2018)

1.27. Fuel Oil. – Refined oil middle distillates, heavy distillates, or residues of refining, or blends of these, suitable for use as a fuel for heating or power generation. **The fuel may be refined from petroleum or biomass and may contain biodiesel and fuel additives.**

1.56. Wholesale Purchaser Consumer. – Any person who is an ultimate consumer of gasoline, fuel methanol, ethanol flex fuel, diesel fuel, biodiesel, biodiesel blends, fuel oil, kerosene, aviation turbine fuels, natural gas, compressed natural gas, or liquefied petroleum gas and who purchases or obtains the product from a supplier and receives delivery of that product into a storage tank.

(Added 1998) (Amended 1999 and 2014)

1.XX. Renewable Diesel. – A refined middle distillate hydrocarbon produced from biomass and suitable for use as a fuel in a compression-ignition (diesel) internal combustion engine.

(Added 20XX)

Section 2. Standard Specifications

2.2. Diesel Fuel. – Shall meet the following requirements, based on the biodiesel concentration of the fuel:

(a) Diesel fuel that contains less than or equal to 5 % by volume biodiesel shall meet the latest version of ASTM D975, "Standard Specifications for Diesel Fuels" and shall be sold as diesel fuel.

(b) Diesel fuel that contains greater than or equal to 6 % by volume biodiesel and that contains less than or equal to 20 % by volume shall meet the latest version of ASTM D7467, "Standard Specifications for Diesel Fuel Oil, Biodiesel Blend (B6 to B20)."

(c) Only fuel additive registered with the U.S. EPA may be used to additize diesel fuel, and the final product shall meet the latest version of ASTM D975 and/or ASTM D7467.

(Amended 2003 and 2018)

2.2.1. Premium Diesel Fuel. – All diesel fuels identified on retail dispensers as premium, super, supreme, or premier must conform to the following minimum requirements:

(a) **Cetane Number.** – A minimum cetane number of 47.0 as determined by the latest version of ASTM D613, "Standard Test Method for Cetane Number of Diesel Fuel Oil."

NOTE: ASTM D613, "Standard Test Method for Cetane Number of Diesel Fuel Oil" is the referee method; however, the following methods can be used to determine cetane number: the latest version of ASTM D6890, "Standard Test Method for Determination of

Ignition Delay and Derived Cetane Number" (DCN) of Diesel Fuel Oils by Combustion in a Constant Volume Chamber"; and ASTM D7668, "Standard Test Method for Determination of Derived Cetane Number (DCN) of Diesel Fuel Oils—Ignition Delay and Combustion Delay Using a Constant Volume Combustion Chamber Method."

(Note added 2019)

(b) **Low Temperature Operability.** – A cold flow performance measurement which meets the latest version of ASTM D975, "Standard Specification for Diesel Fuel," tenth percentile minimum ambient air temperature charts and maps by the latest version of either ASTM D2500, "Standard Test Method for Cloud Point of Petroleum Products and Liquid Fuels" or ASTM D4539, "Standard Test Method for Filterability of Diesel Fuels by Low Temperature Flow Test, (LTFT)." The latest version of ASTM D6371, "Standard Test Method for Cold Filter Plugging Point of Diesel and Heating Fuels" may be used when the test results are a maximum of 6 °C below the Cloud Point. Low temperature operability is only applicable October 1 to March 31 of each year.

(c) **Lubricity.** – A maximum wear scar diameter of 460 micrometers as determined by the latest version ASTM D6079, "Standard Test Method for Evaluating Lubricity of Diesel Fuels by the High-Frequency Reciprocating Rig (HFRR)."

NOTE: The latest version of ASTM D6079, "Standard Test Method for Evaluating Lubricity of Diesel Fuels by the High-Frequency Reciprocating Rig (HFRR)" is the referee method; however, the latest version of ASTM D7688, "Standard Test Method for Evaluating Lubricity of Diesel Fuels by the High-Frequency Reciprocating Rig (HFRR) by Visual Observation" can be used.

(Note added 2019)

(d) **Corrosion.** – A minimum rating of B+ as determined by the latest version of NACE TM0172, "Determining Corrosive Properties of Cargoes in Petroleum Product Pipelines."

NOTE: The latest version of NACE TM0172 "Determining Corrosive Properties of Cargoes in Petroleum Product Pipelines" is the referee method. The latest version of ASTM D7548 "Standard Test Method for Determination of Accelerated Iron Corrosion in Petroleum Products" can be used.

(Added 2019)

(e) **Filter Blocking Tendency (FBT).** – A maximum of 2.2 by the latest version of ASTM D2068, "Standard Test Method for Determining Filter Blocking Tendency", following procedure B.

(Added 2019)

(f) **Injector Deposit Control.** – Maximum power loss in keep-clean mode of 2 % by the latest version of Coordinating European Council, CEC F-98-08, "Direct Injection, Common Rail Diesel Engine Nozzle Coking Test."

(Added 2019)

2.2.2. Use of Other Diesel Terminology. – For any terms other than premium, super, supreme, or premier included in the diesel fuel product or grade name and/or advertisements and claims displayed on dispensers, pump toppers, pole signs and bollard signs which imply improved performance, the product must have a clearly-defined fuel property with a substantiated functional

benefit. Such property must be measurable utilizing industry accepted test methodologies developed by recognized standards organizations such as ASTM, SAE, and CEC to allow verification of the improved performance.

(Added 2019)

(Amended 2003 and 2019)

2.5. Fuel Oils. – Shall meet the latest version of ASTM D396, "Standard Specification for Fuel Oils."

2.6. Kerosene (Kerosine). – Shall meet the latest version of ASTM D3699, "Standard Specification for Kerosine."

2.17. Biodiesel Blendstock. – Biodiesel intended for blending with diesel fuel shall meet the latest version of ASTM D6751, "Standard Specification for Biodiesel Fuel Blend Stock (B100) for Middle Distillate Fuels." Any blend stock less than 99 % by volume biodiesel (no more than 1 % by volume diesel fuel). Any blend stock less than 99 % by volume shall not be used as a commercial blend stock for biodiesel blends without the permission of the Director.

(Added 2004) (Amended 2018)

Section 3. Classification and Labeling for Sale.

3.1. General Considerations.

3.1.1. Documentation. – When products regulated by this rule are sold, an invoice, bill of lading, shipping paper, or other documentation must accompany each delivery other than a retail sale. This document must identify the quantity, the name of the product, the particular grade of the product, the applicable automotive fuel rating, and oxygenate type and content (if applicable), the name and address of the seller and buyer, and the date and time of the sale. Documentation must be retained at the retail establishment for a period not less than one year.

(Amended 2008)

3.1.2. Retail Dispenser Labeling. – All retail dispensing devices must identify conspicuously the type of product (exception: gasoline and gasoline-oxygenate blends), the particular grade of the product (exception: No. 2 Diesel), and the applicable automotive fuel rating.

(Amended 2018)

3.1.3. Grade Name. – The sale of any product under any grade name that indicates to the purchaser that it is of a certain automotive fuel rating or ASTM grade shall not be permitted unless the automotive fuel rating or grade indicated in the grade name is consistent with the value and meets the requirements of Section 2, Standard Specifications.

3.1.4. Nozzle Requirements for Automotive Gasoline, Gasoline-Oxygenate Blends, and Diesel Fuel Dispensers. – Each retail dispensing device from which fuel products are sold shall be equipped with a nozzle spout having a diameter that conforms with the latest version of SAE J285, "Dispenser Nozzle Spouts for Liquid Fuel Intended for Use with Spark-Ignition and Compression Ignition Engines."

(Added 2018)

(Amended 2018)

3.3. Diesel Fuel.

3.3.1. Labeling of Grade Required. – Diesel Fuel other than No 2-D shall be identified by grade.

(Amended 2018)

3.3.2. Automotive Fuel Rating. – Diesel fuel containing 6 % to 20 % by volume biodiesel **and/or containing 6% or greater renewable diesel** shall be labeled with its automotive fuel rating in accordance with the FTC "Automotive Fuel Ratings, Certification and Posting Rule," 16 CFR 306.

(Added 2018)

3.3.3. Delivery Documentation for Premium Diesel. – Before or at the time of delivery of premium diesel fuel, the retailer or the wholesale purchaser-consumer shall be provided on an invoice, bill of lading, shipping paper, or other documentation a declaration of all performance properties that qualifies the fuel as premium diesel fuel as required in Section 2.2.1. Premium Diesel Fuel.

(Added 1998) (Amended 1999)

(Amended 1998, 1999, 2008, 2012, and 2018)

3.6. Fuel Oils.

3.6.1. Labeling of Grade Required. – Fuel Oil shall be identified by the grades contained in the latest version of ASTM D396, "Standard Specification for Fuel Oils."

(Amended 2018)

3.6.2. Retail Fuel Oil. – Dispensers shall display the following legend:

"Warning – Not Suitable for Use in Unvented Heaters Requiring No. 1-K Kerosene."

The lettering of this legend shall not be less than 12.7 mm ($^1/_2$ in) in height by 1.5 mm ($^1/_{16}$ in) strokes (width of type), block style letters, and the color of lettering shall be in definite contrast to the background color to which it is applied.

(Added 2018)

(Amended 2008 and 2018)

3.15. Biodiesel and Biodiesel Blends containing greater than 20 % by volume biodiesel.

3.15.1. Identification of Product. – Biodiesel Blendstock shall be identified by the term "biodiesel" with the designation "B100" or "B99."

(Amended 2018)

3.15.2. Labeling of Retail Dispensers.

3.15.2.1. Labeling of Grade Required. – Biodiesel shall be identified by the grades No. 1-B S15**, ~~or~~** No. 1-B S500**, No. 2-B S15**, or No. 2-B S500.

(Amended 2018)

3.15.2.2. Automotive Fuel Rating. – **Fuels meeting the above requirements and/or including greater than 5 % renewable diesel ~~Biodiesel and biodiesel blends diesel~~** shall be

labeled with its automotive fuel rating in accordance with the FTC Automotive Fuel Ratings, Certification and Posting Rule, 16 CFR 306.

(Amended 2018)

3.15.2.3. Biodiesel Blends. – When biodiesel blends greater than 20 % by volume are offered by sale, each side of the dispenser where fuel can be delivered shall have a label conspicuously placed that states "Consult Vehicle Manufacturer Fuel Recommendations." The lettering of this legend shall not be less than 6 mm (1/4 in) in height by 0.8 mm (1/32 in) stroke; block style letters and the color shall be in definite contrast to the background color to which it is applied.

3.15.3. Documentation for Dispenser Labeling Purposes. – The retailer shall be provided, at the time of delivery of the fuel, a declaration of the volume percent biodiesel on an invoice, bill of lading, shipping paper, or other document. This documentation is for dispenser labeling purposes only; it is the responsibility of any potential blender to determine the amount of biodiesel in the diesel fuel prior to blending.

~~**3.15.4. Exemption. Biodiesel blends that contain less than or equal to 5 % biodiesel by volume are exempted from the requirements of Sections 3.15.1. Identification of Product, 3.15.2. Labeling of Retail Dispensers, and 3.15.3. Documentation for Dispenser Labeling Purposes when it is sold as "diesel fuel" as required in Section 3.3. Diesel Fuel.**~~

(Added 2005) (Amended 2008 and 2018**, and 20XX**)

Section 4. Retail Storage Tanks and Dispenser Filters

4.1. Water in Gasoline-Alcohol Blends, Biodiesel Blends, Ethanol Flex Fuel, Aviation Gasoline, and Aviation Turbine Fuel. – No water phase greater than 6 mm (¼ in) as determined by an appropriate detection paste or other acceptable means, is allowed to accumulate in any tank utilized in the storage of gasoline-alcohol blend, biodiesel, biodiesel blends, ethanol flex fuel, aviation gasoline, and aviation turbine fuel.

(Amended 2008, 2012, and 2014)

4.2. Water in Gasoline, Diesel, Gasoline-Ether, and Other Fuels. – Water shall not exceed 25 mm (1 in) in depth when measured with water indicating paste or other acceptable means in any tank utilized in the storage of diesel, gasoline, gasoline-ether blends, and kerosene sold at retail except as required in Section 4.1. Water in Gasoline-Alcohol Blends, Biodiesel Blends, Ethanol Flex Fuel, Aviation Gasoline, and Aviation Turbine Fuel.

(Amended 2008, 2012, and 2014)

4.3. Dispenser Filters.

4.3.1. Engine Fuel Dispensers.

(a) All gasoline, gasoline-alcohol blends, gasoline-ether blends, ethanol flex fuel, and M85 methanol dispensers shall have a 10 micron or smaller nominal pore-sized filter.

(b) All biodiesel, biodiesel blends, diesel, and kerosene dispensers shall have a 30 micron or smaller nominal pore-sized filter.

(Amended 2014)

Regional Association Reporting:

Western Weights and Measures Association

At the 2022 WWMA Annual Meeting, Ms. Rebecca Richardson (Clean Fuels Alliance America), supported continued development of this item. Mr. Kevin Schnepp of CDFA DMS proposed several changes:

- 2.31.1. There are no current ASTM fuel quality standards for biodiesel, diesel blends greater than 20%. This section would imply that there is.
- Deletion of 2.31.2.2. I do not see a need for this deletion.
- Deletion of 2.31.4. Exemption. I do not see a need for this deletion. This section clarifies that biodiesel, diesel blends less than 5 % as considered diesel fuel.
- Addition of 2.40.3 Labeling requirements: The FTC is covered in 2.31.2.2. If that section is deleted, then this requirement would be necessary.

B1: FLR-23.1

- 1.9. Biodiesel Blend. There are no current ASTM fuel quality standards for biodiesel, diesel blends greater than 20%. This section would imply that there is.
- 1.27. Fuel Oil. This is consistent with ASTM D396.
- 1.XX. Renewable Diesel. This is a weak definition that needs to be worked on.
- 3.3.2. Automotive Fuel Rating. – This is consistent with 16CRF306.
- 3.15. Biodiesel and Biodiesel Blends containing greater than 20% by volume biodiesel. This is attempting to establish biodiesel blends greater than 20% by volume.
- 3.15.2.1. Labeling of Grade Required. This Fixes a miss B-2 S15 grade label.
- 3.15.2.2. Automotive Fuel Rating. This is the FTC requirement.
- 3.15.2.3. Biodiesel Blends. This section was not modified but I recommend that it be removed as there is no fuel quality standard for greater than 20% biodiesel, diesel blends.
- 3.15.4. Exemption. – This is consistent with 16CFR306.

Based on testimony heard regarding this item not being fully developed, the WWMA L&R Committee recommends this item be assigned Developing status.

Central Weights and Measures Association

At the 2022 CWMA Interim Meeting, Mr. Chuck Corr (Iowa RFA and submitter) reviewed the changes which he indicated are an extension to what was changed and approved at the 2022 NCWM Annual Meeting. Ms. Tamara Paik (Marathon) commented she sees small differences between FTC rules, and this proposed item. She believes there should be more consistency between the two. Mr. Prentiss Searles (API) commented that there are some changes that can be made including consistent reference to CFR in section 3.3.2. (citation references which Mr. Corr considers as editorial in nature). Mr. Mike Harrington (Iowa) commented he supports the item and indicated Iowa has passed legislation to incentivize B30 so higher blends are coming to the marketplace. Mr. Scott Fenwick (Clean Fuels Alliance America) commented he is supportive of the concept and supports consistent language and uniformity with citations throughout the Handbook. Mr. Harrington also supports alignment and consistency across various sections of Handbook 130 as well as with FTC. The Committee believes that comments made regarding lack of consistency between FTC rules, EPA rules and what appears in the handbook are valid and should be further developed.

Southern Weights and Measures Association

At the 2022 SWMA Annual Meeting, Mr. Randy Jennings (Clean Fuels) commented that he is generally in support of the items submitted and would like to see it go forward in some fashion. Speaking on his own behalf, he would like to suggest an amendment to the definition for diesel fuel to align with the recently updated ASTM D975.

Mr. Joe Sorena (Chevron) recommends the item remain in development and L&R consider alternate wording proposed concerning the concept of redefining the bio diesel blend containing greater than 20 %, as it is inconsistent with D7467 and will contribute to customer confusion.

Dr. Matthew Curran (Florida) commented he spoke with Chuck Corr regarding this item. Conceptually, approves this section. Inconsistencies were described found in the titles of MOS-23.1 and FLR-23.1 and a recommendation for clearer titles was made. He recommends in 2.31.2.1 verbiage is added to the specific EPA and FTC requirements.

Mr. Randy Jennings (Clean Fuels) suggested to form a focus group within FALS with Chuck Corr to lead and move this item forward.

The Committee corrected the title as follows:

Sections 2.~~2~~31. Biodiesel and biodiesel Blends <u>that Contain Greater Than or Equal to 21% by Volume Biodiesel.</u> and 2.40. Diesel Fuel.

The Committee agrees that this item needs more development and recommends this as a Developing Item on the NCWM Agenda.

Northeastern Weights and Measures Association

At the 2022 NEWMA Interim Meeting, Ms. Rebecca Richardson (Clean Fuels Alliance America) commented that she supports the item moving forward with an Assigned status and recommends L&R refer it to FALS for further development. Mr. Jim Willis (New York) concurs. The Committee recommends Assigned status for this item.

Item Block 2 (B2) Gasoline

B2: MOS-23.2 Section 2.20 Gasoline and Gasoline-Oxygenate Blends
B2: FLR-23.2 Sections 2.1. Gasoline-Oxygenate Blends, 3.2. and Automotive Gasoline and Automotive Gasoline-Oxygenate Blends (Including Racing Gasoline).

Source: CC Consulting, LLC

Submitter's Purpose and Justification:

Properly align the text with the EPA regulation citations approved at the 2022 annual meeting. These changes are important to retailers as all of these fuels are now subject to the EPA survey program. The current text of this section misrepresents the contents of the EPA regulations cited. Some may see this as an unnecessary change. A careful review of the EPA regulation should resolve this concern.

Table 3. Summary of Recommendations

Item Block 2. (B2) – Gasoline

	V	D	W	A	I	Note*	Comments
Submitter							
OWM							
CWMA	✓						
WWMA		✓					
SWMA		✓					
NEWMA		✓					
NCWM							

***Notes Key:**
1 – Submitted modified language
2 – Item not discussed
3 – No meeting held
4 – Not submitted on agenda
5 – No recommendation or not considered

Item Under Consideration:

Amend Handbook 130 Uniform Regulation for the Method of Sale of Commodities as follows:

2.20. <u>Gasoline and</u> Gasoline-Oxygenate Blends.

2.20.1. Method of Retail Sale. – Type of Oxygenate must be Disclosed. – All automotive gasoline or automotive gasoline-oxygenate blends kept, offered, or exposed for sale, or sold at retail containing at least 1.5 mass percent oxygen shall be identified as "with" or "containing" (or similar wording) the predominant oxygenate in the engine fuel. For example, the label may read "contains ethanol" or "with MTBE." The oxygenate contributing the largest mass percent oxygen to the blend shall be considered the predominant oxygenate. Where mixtures of only ethers are present, the retailer may post the predominant oxygenate followed by the phrase "or other ethers" or alternatively post the phrase "contains MTBE or other ethers." In addition, gasoline-methanol

blend fuels containing more than 0.15 mass percent oxygen from methanol shall be identified as "with" or "containing" methanol. This information shall be posted on the upper 50 % of the dispenser front panel in a position clear and conspicuous from the driver's position in a type at least 12.7 mm ($^1/_2$ in) in height, 1.5 mm ($^1/_{16}$ in) stroke (width of type).

(Amended 1996)

2.20.2. Product Transfer Document (PTD) Requirements. ~~Documentation for Dispenser Labeling Purposes.~~ – The retailer shall be provided, at the time of delivery of the fuel, on product transfer documents such as an invoice, bill of lading, shipping paper, or other documentation:

(a) Information that complies with 40 CFR 1090.1110 **PTD requirements for gasoline, gasoline additives, and gasoline regulated blendstocks ~~when the fuel contains ethanol~~**.

(b) For fuels **containing multiple oxygenates or oxygenates other than ethanol ~~that do not contain ethanol~~**, information that complies with **2.20.2(a)** **~~40 CFR 1090.1110~~** and a declaration of the predominant oxygenate or combination of oxygenates present in concentrations sufficient to yield an oxygen content of at least 1.5 mass percent in the fuel. Where mixtures of only ethers are present, the fuel supplier may identify either the predominant oxygenate in the fuel (i.e., the oxygenate contributing the largest mass percent oxygen) or alternatively, use the phrase "contains MTBE or other ethers."

(c) **~~Gasoline~~** **For fuels** containing more than 0.15 mass percent oxygen from methanol **information that complies with 2.20.2(a) and a declaration identifying the fuel ~~shall be identified~~** as "with" or "containing" methanol.

(Added 1984) (Amended 1985, 1986, 1991, 1996, 2014 and 2022**, and 20XX**)

2.20.3. EPA Labeling Requirements. – Retailers and wholesale purchaser-consumers of gasoline shall comply with the EPA pump labeling requirements for gasoline containing greater than 10 volume percent (v%) up to 15 volume percent (v%) ethanol (E15) under 40 CFR 1090.*1510* ***E15 labeling provisions***. (For additional information, refer to Section 2.30.2. FTC Labeling Requirements.)

(Added 2018) (Amended 2022, 2022, **and 20XX)**

B2: FLR-23.2 Sections 2.1. Gasoline-Oxygenate Blends, 3.2. and Automotive Gasoline and Automotive Gasoline-Oxygenate Blends (Including Racing Gasoline).

Amend Handbook 130 Uniform Fuels and Automotive Lubricants Regulation as follows:

2.1. Gasoline and Gasoline-Oxygenate Blends.

2.1.2. Gasoline-Ethanol Blends. – When gasoline is blended with denatured fuel ethanol, the denatured fuel ethanol shall meet the latest version of ASTM D4806, "Standard Specification for Denatured Fuel Ethanol for Blending with Gasolines for Use as Automotive Spark-Ignition Engine Fuel," and the blend shall meet the latest version of ASTM D4814, "Standard Specification for Automotive Spark-Ignition Engine Fuel," with the following permissible exceptions:

(a) The maximum vapor pressure shall not exceed the latest version of ASTM D4814, "Standard Specification for Automotive Spark-Ignition Engine Fuel," limits by more than

1.0 psi for blends from June 1 through September 15 as allowed by EPA per 40 CFR 1090.215(b) **Gasoline RVP standards**.

(Amended 2016, 2018, 2019, 2022**, and 20XX**)

3.2. Automotive Gasoline and Automotive Gasoline-Oxygenate Blends (Including Racing Gasoline).

3.2.5. Product Transfer Document (PTD) Requirements. ~~Documentation for Dispenser Labeling Purposes.~~ – For automotive gasoline, automotive gasoline-oxygenate blends or racing gasoline, the retailer shall be provided, at the time of delivery of the fuel, on product transfer documents such as an invoice, bill of lading, shipping paper, or other documentation:

(a) Information that complies with 40 CFR 1090.1110 **PTD requirements for gasoline, gasoline additives, and gasoline regulated blendstocks ~~when the fuel contains ethanol.~~**

(Added 2014) (Amended 2022**, and 20XX)**

(b) For fuels **containing multiple oxygenates or oxygenates other than ethanol ~~that do not contain ethanol~~**, information that complies with **2.20.2(a)** **~~40 CFR 1090.1110~~** and a declaration of the predominant oxygenate or combination of oxygenates present in concentrations sufficient to yield an oxygenate content of at least 1.0 % by volume in the fuel. Where mixtures of only ethers are present, the fuel supplier may identify either the predominant oxygenate in the fuel (i.e., the oxygenate contributing the largest mass percent oxygen) or alternatively, use the phrase "contains MTBE or other ethers."

(Added 2014) (Amended 2022**, and 20XX)**

(c) **~~Gasoline~~ For fuels** containing more than 0.3 % by volume methanol **information that complies with 2.20.2(a) and a declaration identifying the fuel ~~shall be identified~~** as "with" or "containing" methanol.

(Added 2014) (Amended 2018**, and 20XX**)

(Amended 1996, 2014, and 2018)

3.2.6. EPA Labeling Requirements. – Retailers and wholesale purchaser-consumers of gasoline shall comply with the EPA pump labeling requirements for gasoline containing greater than 10 volume percent (v%) up to 15 volume percent (v%) ethanol (E15) under 40 CFR 1090.1510 **E15 labeling provisions**. (For additional information, refer to Section 3.8.2. FTC Labeling Requirements.)

(Added 2012) (Amended 2018, 2023, **and 20XX**)

(Amended 2018)

Regional Association Reporting:

Western Weights and Measures Association

At the 2022 WWMA Annual Meeting, amended language was provided by the submitter and is available on the WWMA website. Mr. Kevin Schnepp (CDFA DMS) suggested they should not use acronyms (PTD) and that he supports development of this item. Based on testimony heard regarding this item not being fully developed, the WWMA L&R Committee recommends this item be assigned Developing status.

Central Weights and Measures Association

At the 2022 CWMA Interim Meeting, Mr. Chuck Corr (Iowa RFA) commented this proposal aligns Handbook 130 with the EPA regulation citations approved at the 2022 annual meeting and citations should be included in the title which he believes are editorial in nature. Mr. Doug Musick and Mr. Loren Minnich (Kansas) support the item. Mr. Minnich suggested that under Section 2.20.2., (a) should be the head section and sections b and c become subsections ii and iii? Mr. Corr addressed the structure of that section by moving (a) into 2.20.2., and then "b" becomes "a" and "c" becomes "b" as listed below. He supports Voting status for both items. Based on discussion during open hearings, the Committee believes this item is fully developed and ready for Voting status using the following version:

B2: MOS-23.2 V Section 2.20. Gasoline and Gasoline-Oxygenate Blends.

2.20. Gasoline and Gasoline-Oxygenate Blends.

2.20.1. Method of Retail Sale. – Type of Oxygenate must be Disclosed. – All automotive gasoline or automotive gasoline-oxygenate blends kept, offered, or exposed for sale, or sold at retail containing at least 1.5 mass percent oxygen shall be identified as "with" or "containing" (or similar wording) the predominant oxygenate in the engine fuel. For example, the label may read "contains ethanol" or "with MTBE." The oxygenate contributing the largest mass percent oxygen to the blend shall be considered the predominant oxygenate. Where mixtures of only ethers are present, the retailer may post the predominant oxygenate followed by the phrase "or other ethers" or alternatively post the phrase "contains MTBE or other ethers." In addition, gasoline-methanol blend fuels containing more than 0.15 mass percent oxygen from methanol shall be identified as "with" or "containing" methanol. This information shall be posted on the upper 50 % of the dispenser front panel in a position clear and conspicuous from the driver's position in a type at least 12.7 mm (1/2 in) in height, 1.5 mm (1/16 in) stroke (width of type).

(Amended 1996)

2.20.2. Product Transfer Document (PTD) Requirements. ~~Documentation for Dispenser Labeling Purposes.~~ – The retailer shall be provided **information that complies with 40 CFR 1090.1110 *PTD requirements for gasoline, gasoline additives, and gasoline regulated blendstocks***, at the time of delivery of the fuel, on product transfer documents such as an invoice, bill of lading, shipping paper, or other documentation**. Additional declarations may be required for specific fuels**:

~~(a) Information that complies with 40 CFR 1090.1110 when the fuel contains ethanol.~~

(a) ~~(b)~~ For fuels **containing multiple oxygenates or oxygenates other than ethanol ~~that do not contain ethanol, information that complies with 40 CFR 1090.1110 and~~** a declaration of the predominant oxygenate or combination of oxygenates present in concentrations sufficient to yield an oxygen content of at least 1.5 mass percent in the fuel. Where mixtures of only ethers are present, the fuel supplier may identify either the predominant oxygenate in the fuel (i.e., the oxygenate contributing the largest mass percent oxygen) or alternatively, use the phrase "contains MTBE or other ethers."

(b) ~~(c) Gasoline~~ For fuels containing more than 0.15 mass percent oxygen from methanol **a declaration identifying the fuel ~~shall be identified~~** as "with" or "containing" methanol.

(Added 1984) (Amended 1985, 1986, 1991, 1996, 2014 and 2022**, and 20XX**)

2.20.3. EPA Labeling Requirements. – Retailers and wholesale purchaser-consumers of gasoline shall comply with the EPA pump labeling requirements for gasoline containing greater than 10 volume percent (v%) up to 15 volume percent (v%) ethanol (E15) under 40 CFR 1090.1510 ***E15 labeling provisions***. (For additional information, refer to Section 2.30.2. FTC Labeling Requirements.)

(Added 2018) (Amended 2022, 2022, **and 20XX)**

B2: FLR-23.2 V Sections 2.1. Gasoline-Oxygenate Blends, 3.2. and Automotive Gasoline and Automotive Gasoline-Oxygenate Blends (Including Racing Gasoline).

2.1. Gasoline and Gasoline-Oxygenate Blends.

2.1.2. Gasoline-Ethanol Blends. – When gasoline is blended with denatured fuel ethanol, the denatured fuel ethanol shall meet the latest version of ASTM D4806, "Standard Specification for Denatured Fuel Ethanol for Blending with Gasolines for Use as Automotive Spark-Ignition Engine Fuel," and the blend shall meet the latest version of ASTM D4814, "Standard Specification for Automotive Spark-Ignition Engine Fuel," with the following permissible exceptions:

(a) The maximum vapor pressure shall not exceed the latest version of ASTM D4814, "Standard Specification for Automotive Spark-Ignition Engine Fuel," limits by more than 1.0 psi for blends from June 1 through September 15 as allowed by EPA per 40 CFR 1090.215(b) ***Gasoline RVP standards***.

(Amended 2016, 2018, 2019, 2022**, and 20XX**)

3.2. Automotive Gasoline and Automotive Gasoline-Oxygenate Blends (Including Racing Gasoline).

3.2.5. Product Transfer Document (PTD) Requirements. ~~Documentation for Dispenser Labeling Purposes.~~ – For automotive gasoline, automotive gasoline-oxygenate blends or racing gasoline, the retailer shall be provided **information that complies with 40 CFR 1090.1110 *PTD requirements for gasoline, gasoline additives, and gasoline regulated blendstocks***, at the time of delivery of the fuel, on product transfer documents such as an invoice, bill of lading, shipping paper, or other documentation**. Additional declarations may be required for specific fuels**:

~~**(a) Information that complies with 40 CFR 1090.1110 when the fuel contains ethanol. (Added 2014) (Amended 2022)**~~

(a)~~(b)~~ For fuels **containing multiple oxygenates or oxygenates other than ethanol ~~that do not contain ethanol~~**, **~~information that complies with 40 CFR 1090.1110 and~~** a declaration of the predominant oxygenate or combination of oxygenates present in concentrations sufficient to yield an oxygenate content of at least 1.0 % by volume in the fuel. Where mixtures of only ethers are present, the fuel supplier may identify either the predominant oxygenate in the fuel (i.e., the oxygenate contributing the largest mass percent oxygen) or alternatively, use the phrase "contains MTBE or other ethers."

(Added 2014) (Amended 2022**, and 20XX)**

(b) ~~**(c) Gasoline**~~ **For fuels** containing more than 0.3 % by volume methanol **a declaration identifying the fuel** ~~**shall be identified**~~ as "with" or "containing" methanol.

(Added 2014) (Amended 2018**, and 20XX**)

(Amended 1996, 2014, and 2018)

3.2.6. EPA Labeling Requirements. – Retailers and wholesale purchaser-consumers of gasoline shall comply with the EPA pump labeling requirements for gasoline containing greater than 10 volume percent (v%) up to 15 volume percent (v%) ethanol (E15) under 40 CFR 1090.1510 ***E15 labeling provisions***. (For additional information, refer to Section 3.8.2. FTC Labeling Requirements.)

(Added 2012) (Amended 2018, 2023, **and 20XX**)

(Amended 2018)

Southern Weights and Measures Association

At the 2022 SWMA Annual Meeting, the L&R Chair provided an updated given by the submitter. These proposed changes were not available to the SWMA Conference for review.

The Committee decided this item remains a Developing Item on the NCWM agenda.

Northeastern Weights and Measures Association

At the 2022 NEWMA Meeting, Ms. Lisa Warfield, NIST Technical Advisor commented that she believes the item should move forward with Informational status. Mr. Jim Willis (New York) commented that he believes the item should be given Developmental status. The Committee recommends Developing status for this item.

Item Block 3 (B3) Cannabis

(***Note:*** At the 2022 NCWM Interim Meeting, the Committee heard testimony on each individual item in Block 3: B3 (Cannabis). The comments heard are reported for each item within the block, but the Committee kept PAL-22.1 PAL 22.2 and MOS-22.2 together as a block. At the 2022 NCWM Annual Meeting, NET-22.1 was removed from the block and was considered separately.)

B3: PAL-22.1 V Section 2. Definitions 2.XX. *Cannabi*s and *Cannabis*-Containing Products.
B3: PAL-22.2 V Section 10. Requirements, 10.XX. *Cannabis* and *Cannabis*-Containing Products.
B3: MOS-22.2 V Section 1.XX. *Cannabis* and *Cannabis*-Containing Products and 2.XX. *Cannabis* and *Cannabis*-Containing Products.

Source: NCWM Cannabis Task Group

Submitter's Purpose and Justification:

B3: PAL-22.1 Section 2. Definitions 2.XX *Cannabis* and *Cannabis*-Containing Products.

Establish a clear definition of Cannabis and Cannabis-containing products for use in NIST Handbook 130 Uniform Packaging and Labeling Requirements.

Since *Cannabis* and *Cannabis*-containing products were first legalized by some states, the industry has undergone an unprecedented expansion. Even though these products haven't received Federal approval at this time, more and more states have supported *Cannabis* and *Cannabis*-containing products for medicinal or adult-use under their own laws. This has resulted in boutique markets developing across the country with restrictive state boundaries for lack of clarity and uniformity in commercialization of these products.

Cannabis and *Cannabis*-containing products are unique in many aspects; they have a niche as medicine, have resulted in the development of adult use markets, and have an incredible array of different manufacturing and industrial applications. Some of these products contain controlled substances which presents a special concern for the safety and welfare of consumers if misused or mishandled. Further, they are subject to strict regulations by multiple government agencies. *Cannabis* and *Cannabis*-containing products and applications range from non-food to food products for human and animal consumption through inhalation, ingestion, and/or topical or dermal application. They can be used as ingredients in other commodities, changing in most cases the product identity to *Cannabis* and *Cannabis*-containing products. Some *Cannabis* and *Cannabis*-containing products are very susceptible to environmental conditions easily losing or gaining moisture with consequences impacting net quantity, degradation of active cannabinoids, and/or microbial proliferation depending on the situation. These are just some of the reasons there are many concerns and uncertainty surrounding the method of sale and commercialization of *Cannabis* and *Cannabis*-containing products.

Many states have already, or are in the planning stages of, codified packaging and labeling regulations that may differ from those proposed here. They may change yet again once the federal government establishes regulations for *Cannabis* and *Cannabis*-containing products. However, unifying the packaging and labeling requirements nationally through this proposal will eliminate the boutique markets currently developing. Much of industry has expressed the desire for uniformity and this will align with their needs in this regard.

The submitter requested that this be a Voting Item in 2022.

B3: PAL-22.2 Section 10. Requirements, 10.XX Cannabis and Cannabis-Containing Products.

Establish uniform packaging and labeling requirements for Cannabis and Cannabis-containing products. In addition to the justification statement in PAL 22.1 this section is specific to Cannabis is being introduced as an ingredient into many commodities, having a statement on the principal display panel will allow consumers to be informed as to its contents. The amount and type of cannabinoids are a deciding factor to consumers when purchasing Cannabis and Cannabis-containing products. This would also provide regulators with the information necessary to ensure consumers are not being defrauded as these products carry a hefty price tag. A declaration of marketed cannabinoids and their respective concentration will allow consumers to compare like products for value comparison. Both requirements will also act as a safety mechanism to alert consumers of the contents and aid them in selecting the desired product.

B3: MOS-22.2 Section 1.XX. *Cannabis* and *Cannabis*-Containing Products and 2.XX. *Cannabis* and *Cannabis*-Containing Products.

Create a new section in the Uniform Regulation for the Method of Sale of Commodities in Handbook 130 for *Cannabis* and *Cannabis*-Containing Products. Given the nature of these products, they need to be included in both, the Food and Non-Food sections of this regulation.

This proposal was drafted by the Method of Sale Focus Group within the NCWM Cannabis Task Group.

The ASTM International D37 Cannabis Committee has more than 900 members, the vast majority of which are industry stakeholders. The first two D37 standards passed through the consensus process related to

water activity, one of which used all available data to establish an ideal range of 0.55 to 0.65 for *Cannabis* plant material. The proposal to the Method of Sale herein includes a water activity of 0.60 +/- 0.05. While industry has indicated they will reiterate their support for this water activity standard through the NCWM process it is important for the Committee and Membership to be made aware that approximately 900 industry members have already weighed in on and given their consensus support to this standard. Since *Cannabis* and *Cannabis*-Containing products were first legalized by some states, the industry has undergone an unprecedented expansion. Even though these products haven't received Federal approval at this time, more and more states have supported *Cannabis* and *Cannabis*-Containing products for medicinal or recreational use under their own laws. This has resulted in boutique markets developing across the country with restrictive state boundaries for lack of clarity and uniformity in commercialization of these products.

Cannabis and *Cannabis*-Containing products are unique in many aspects; they have a niche as medicine, have resulted in the development of adult use markets, and have an incredible array of different manufacturing and industrial applications. Some of these products contain controlled substances which presents a special concern for the safety and welfare of consumers if misused or mishandled. Further, they are subject to strict regulations by multiple government agencies. *Cannabis* and *Cannabis*-Containing products and applications range from non-food to food products for human and animal consumption through inhalation, ingestion, and/or topical or dermal application. They can be used as ingredients in other commodities, changing in most cases the product identity to *Cannabis* and C*annabis*-Containing products. Some *Cannabis* and *Cannabis*-Containing products are very susceptible to environmental conditions easily losing or gaining moisture with consequences impacting net quantity, degradation of active cannabinoids, and/or microbial proliferation depending on the situation. These are just some of the reasons there are many concerns and uncertainty surrounding the method of sale and commercialization of *Cannabis* and *Cannabis*-Containing products.

As a new and rapidly developing industry and given the level of uncertainty and lack of uniformity, *Cannabis* and *Cannabis*-Containing products need a clear and consistent method of sale to provide equity and fairness in the marketplace. Uniformity throughout the method of sale of *Cannabis* and *Cannabis*-Containing products would harmonize regulations across states so these products are not limited by their borders. Further, this would ensure clear and fair competition in the marketplace and provide accurate quantity information for consumers to make informed price and quantity comparisons.

Cannabis has proven to be susceptible to environmental changes, a source of controlled substances, of a high dollar value, and a safety risk for consumers if misused or mishandled. As a result, *Cannabis* and *Cannabis* products require a water activity standard that shall be maintained throughout the entire distribution process from extraction to retail sale.

Water activity is a measure of "free" water available in the plant material to fuel microorganism growth. It is reported on a scale from 0 to 1. The optimal water activity range for *Cannabis* has been determined through scientific studies to be 0.55 - 0.65 and correlates to an environment that is least conducive to the growth of destructive and harmful microorganisms (e.g., molds). If *Cannabis* was to be sold with as little water content as possible the product would not remain viable (i.e., loss or destruction of desired components, such as cannabinoids and terpenes) for as long and could subject the public to increased health and safety concerns. It would not be feasible to have a moisture allowance close to zero but a product viability and safety moisture content within the optimal water activity range. A water activity between 0.55 and 0.65 in *Cannabis* typically correlates to a moisture content of 10-12 %. (See attached Colorado MED report showing 14 % of all flowers failed initial mold/yeast testing before being allowed on the market).

On the *Cannabis* cultivation side, recall that *Cannabis* flower is one of the most valuable materials in the U.S. after precious metals or gems. Between the highest safe water activity (0.65) and the lowest possible water activity (0.04), *Cannabis* flower can fluctuate about 5 % in weight. This means that a jurisdiction not having the ability to test water activity through the supply chain stays exposed to bad actors who could manipulate water activity at key points to divert about 5 % of any harvest in a way that will completely evade every track and trace system. In a world where oversight agencies are concerned about tracking every gram, leaving thousands of pounds at risk of diversion and the related tax loss to the much more lucrative black market is a hole that needs to be plugged.

In the retail *Cannabis* trade, insufficient attention and guidance is given to moisture migration in or out of some *Cannabis* packaging and as a result, the contents of some *Cannabis* flower packaging have been found to be underweight, resulting in the patient/consumer paying for weight that they are not receiving. For instance, underweight complaints are the #1 consumer complaint in Oregon. For the fairness and safety of *Cannabis* consumers, a 3% +/- weight variance Containing on enforcement of acceptable moisture range needs to be established. As has been learned in other industries in which W&M has jurisdiction, if something can get out of a retail package during distribution, it can also get in. The ability to test packaged *Cannabis*-Containing products at retail for water activity becomes a safety and equity concern.

Solution: ASTM D8197-20 (1) establishes the ideal moisture range for *Cannabis* flower in terms of water activity of 0.60 ± 0.05. (Exclusive free access to that ASTM D8197 and to an ASTM water activity eLearning course can be accessed by reaching out to **charlie@cprsquaredinc.com**). This correlates to a moisture content of 10-12 %, which narrows the range of weight variation that must be addressed in dealing with moisture loss.

More than 800 ASTM D37 members concluded that the ideal range for cannabis and hemp flower is 0.55 - 0.65 (the equivalent to 55 – 65 % Relative Humidity). This was affirmed by the U.S. Pharmacopeia's Expert Cannabis Panel in their Cannabis Paper (2) to mitigate mold growth and maintain the quality attributes.

Consumers/patients buying *Cannabis* products are looking for a desired effect. Those effects are in part determined by the presence of terpenes, which have different scents and provide various therapeutic effects. The presence of these terpenes is diminished as the plant dries and the effects the patient/consumer is expecting are also diminished from what is shown on the label (terpene testing). The U.S. Pharmacopeia has determined the same water activity of 0.60 ± 0.05 to be ideal for maintaining these quality attributes (e.g., cannabinoid and terpene content) of *Cannabis* flower (attached).

The submitter mentioned the following possible opposing arguments:

- Patients and consumers don't want to buy water when purchasing *Cannabis*. When it comes to *Cannabis*, they want to buy the right amount of water. The right amount of water (or moisture) helps safeguard the quality and integrity of the *Cannabis* components consumers are purchasing. These active components would degrade in overdried plant material. It could also be argued that by providing a constant moisture content through establishment of a water activity standard for the proper sale of unprocessed *Cannabis* there is a measure of ensuring proper quantity during purchase.

- W&M doesn't regulate quality. To the extent establishing an acceptable water activity range is monitoring quality, this is a positive by-product of monitoring equitable transactions, promoting health and safety and preventing diversion. Oversight of motor fuels is analogous in the sense that the attributes of motor fuel are a function of quality and samples are sent to a lab for testing these attributes.

- Equipment cost. The additional cost of water activity meter(s) should not be prohibitive. It could be easily offset by the revenue that would be saved by preventing over drying and diversion and/or by fees collected. This could be accomplished by random testing of *Cannabis* flower throughout the manufacturing and distributions processes. It should also be noted that setting a water activity standard in the MOS does not establish testing requirements nor frequency of testing requirements.

- Illegal activity. Not every state has legalized the sale and distribution of *Cannabis*, whether it contains more or less than 0.3 % THC. However, there are many states (and federal agencies) that have legalized the sale of *Cannabis* in some form or fashion or another. There are strong indication that federal and other state agencies are working to establish requirements for the sale of *Cannabis* and *Cannabis*-products.

- Some have expressed concern over this water activity applying to *Cannabis*-containing products, which resulted from confusion. The water activity proposed herein would not apply to *Cannabis*-containing products, rather it would only apply to *Cannabis* plant material. Traditional water activity levels applied to food products would not be altered or affected by this proposal.

OWM Executive Summary for Block 3. (B3) – Cannabis

OWM Recommendation[1]: OWM recognizes the importance of this work and the progress the TG has made thus far. However, there are some significant issues that need to be addressed before this block of items is ready for adoption.

OWM recommends this block be designated "Assigned" to the Cannabis TG in order for them to obtain additional information and further develop. OWM has outlined a number of areas requiring additional work in the OWM Executive Summary and OWM Detailed Technical Analysis (below) and states may have additional areas that need to be addressed.

- OWM continues to encourage the Cannabis TG reach out to State Cannabis Commissions, Medicinal Programs, Health Departments, and other State Cannabis Regulatory authorities to work collaboratively to develop language that is acceptable to all stakeholders. There are approximately 22 states that have labeling laws or regulations.

- To inform stakeholders of any developments by the TG, OWM recommends the TG provide a summary to appear in the NCWM Publications. It should be clarified if this TG reports to the NCWM L&R Committee or NCWM Board of Directors.

Form 15's submitted by the Cannabis TG include the following statements. OWM comments are included with each point.

- "W&M does not regulate quality. To the extent establishing an acceptable water activity range is monitoring quality, this is a positive by-product of monitoring equitable transactions, promoting health and safety and preventing diversion."

  OWM Comment: *Weights and measures strives for equity in the marketplaces but has not been involved with the health and safety side of commodities.*

OWM Executive Summary for Block 3. (B3) – Cannabis

- "Equipment cost. The additional cost of water activity meter(s) should not be prohibitive. It could be easily offset by the revenue that would be saved by preventing over drying and diversion and/or by fees collected. This could be accomplished by random testing of Cannabis flower throughout the manufacturing and distributions processes. It should also be noted that setting a water activity standard in the MOS does not establish testing requirements nor frequency of testing requirements."

  OWM Comment: *Many states' package inspection activities are not fee-supported and would not be generating income by charging fees for services.*

B3: PAL-22.1. – Section 2. Definitions, 2.XX. *Cannabis* and *Cannabis*-Containing Products

- Section 2 Definitions define terms as they are used in the UPLR; these are not intended to define commodities in the marketplace. The Committee would not want to set a precedent to defining commodities.

- "Cannabis" has a known standard of identity; it is not necessary to add a definition to the handbook.

B3: PAL-22.2. – Section 10. Requirements, 10.XX. *Cannabis* and *Cannabis*-Containing Products

- OWM had previously noted our concerns with "*Cannabis"* being italicized. Is it a requirement that this term "Cannabis" appear an italics style for packaging and labeling requirements? If so, OWM recommends the Committee add the statement to (a)(2); "the term *Cannabis* shall appear in capitalization and italics style." If it is not a requirement the capitalization and italics format must be removed to avoid confusion in labeling requirements. If the Committee believes that a change is required, they should provide an acceptable time for industry to redo their labeling. We do not concur that these labels are printed "on demand".

- OWM commends the NCWM Cannabis Task Group for its outstanding work on developing these proposals. If these proposals move forward and the NCWM Cannabis Packaging and Labeling Subcommittee is disbanded, OWM recommends that Committee task PALS with the development of *Cannabis* labeling.

B3: MOS-22.2 Section 1.XX *Cannabis* and *Cannabis*-Containing Products and 2.XX Cannabis and Cannabis-Containing Products

OWM does not concur that a method of necessary for this commodity. The Weights and Measures Law, Section 16. Method of Sale which specifies:

Section 16. Method of Sale

Except as otherwise provided by the Director or by firmly established trade custom and practice,

(a) commodities in liquid form shall be sold by liquid measure or by weight; and

(b) commodities not in liquid form shall be sold by weight, by measure, or by count.

OWM Executive Summary for Block 3. (B3) – Cannabis

The method of sale shall provide accurate and adequate quantity information that permits the buyer to make price and quantity comparisons.

- Section 2.XX.X. Water Activity speaks about "unprocessed" Cannabis but does not define what this means and there is no reference within ASTM D8197. With the Water Activity incorporated within the Method of Sale the sentence should have the terms "kept, offered, or exposed, sold, bartered, or exchanged, or ownership transfers" stricken from the proposal.

- Water Activity is not related to Moisture Allowance. Water Activity should not be placed into the Moisture Allowance Table 2-3 within NIST HB 133. Doing so will only cause confusion.

- Water Activity is used to measure the growth of microbes using ASTM D8196-20, Standard Practice for Determination of Water activity (aw) in Cannabis, helping to ensure its safety. It is also used to identify the potency (THC level). In many states water activity testing would be conducted by an agency, other than weights and measures. Outside of fuel quality most weights and measures programs do not inspect and enforce quality and safety of most consumer commodities.

- The Committee should consider the development of a NIST HB133 – Chapter 5 test procedure for determining moisture allowance if the MOS is adopted with criteria for Water Activity.

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[1] In contrast to hemp, marijuana remains a Schedule I substance under the Controlled Substances Act. NIST does not have a policy role related to the production, sale, distribution, or use of cannabis (including hemp and marijuana). NIST participates in the National Conference of Weights and Measures (NCWM) as part of NIST's statutory mission to promote uniformity in state laws, regulations, and testing procedures.

Table 3. Summary of Recommendations

Item Block 3. (B3) – Cannabis

	V	D	W	A	I	Note*	Comments
Submitter	✓						
OWM			✓				
CWMA	✓						
WWMA	✓						
SWMA	✓						
NEWMA	✓						
NCWM	✓						

***Notes Key:**
1 – Submitted modified language
2 – Item not discussed
3 – No meeting held
4 – Not submitted on agenda
5 – No recommendation or not considered

Item Under Consideration:

B3: PAL-22.1 Section 2. Definitions 2.XX *Cannabis* and *Cannabis*-Containing Products.

2.XX. *Cannabis* and *Cannabis*-Containing Products – Cannabis is a genus of flowering plants in the family Cannabaceae, of which *Cannabis sativa, indica, ruderalis* are species., and any hybridization thereof. This definition includes products that contain 0.3 percent or less of Total Delta-9 Tetrahydrocannabinol (THC) (also known as Hemp) and products that contain more than 0.3 percent of Total Delta-9 THC (also known as cannabis, marijuana or marihuana).

(Added 20XX)

B3: PAL-22.2 Section 10. Requirements, 10.XX *Cannabis* and *Cannabis*-Containing Products.

10.XX. *Cannabis* and *Cannabis-Co*ntaining Products – Any *Cannabis* or *Cannabis*-containing products intended for human or animal consumption or application, shall bear on the outside of the package the following:

(a) On the principal display panel

(1) The statement "Contains *Cannabis.*" The word "Cannabis" shall be capitalized and italicized; and ;

(2) The statement "Contains 0.3% or less Total Delta-9 THC" or "Contains more than 0.3 % Total Delta- 9 THC"; and

(b) On back or side panel

(1) a declaration of the labeled cannabinoid per serving or application; and

(2) the quantity declaration shall be in milligrams.

(Added 20XX)

B3: MOS-22.2 Section 1.XX. *Cannabis* and *Cannabis*-Containing Products and 2.XX. *Cannabis* and *Cannabis*-Containing Products.

1.XX. *Cannabis* and *Cannabis*-Containing Products – Cannabis is a genus of flowering plants in the family Cannabaceae, of which *Cannabis sativa, indica, ruderalis* are species and any hybridization thereof. This definition includes products that contain 0.3 percent or less of Total Delta-9 Tetrahydrocannabinol THC (also known as Hemp) and products that contain more than 0.3 percent of Total Delta-9 THC (also known as cannabis, marijuana or marihuana).

1.XX.X. Unit

(a) Volume – Products offered for sale in liquid form shall be sold by volume.

(b) Weight- Products offered for sale in non-liquid form shall be sold by weight. These products may also have a supplemental declaration of count or measure.

1.XX.X. Sale from Bulk

(a) When sold from bulk, all sales shall be based on net weight or net volume.

(b) When liquids are offered for sale from bulk, the reference temperature for measurement shall be 20 °C (68 °F). Products shall be delivered at a temperature within ± 2 °C (5 °F). Artificially heating liquids to temperatures higher than the specified limits is prohibited.

1.XX.X. Water Activity-When unprocessed *Cannabis*, is kept, offered, or exposed for sale, sold, bartered, or exchanged, or ownership transfers, the water activity shall be 0.60 (± 0.05) in accordance with latest version of ASTM D 8197, Standard Specification for Maintaining Acceptable Water Activity (a_w) Range (0.55 to 0.65) for Dry *Cannabis* Flower Intended for Human/Animal Use.

The procedure for determining the water activity in Cannabis flower can be found in the latest version of ASTM D 8196 Standard Practice for Determination of Water Activity (a_w) in *Cannabis* Flower.

(Added 20XX)

And

Section 2. Non-Food Products.

2.XX. *Cannabis* and *Cannabis*-Containing Products – Cannabis is a genus of flowering plants in the family Cannabaceae, of which *Cannabis sativa, indica, ruderalis* are species, and any hybridization thereof. This definition includes products that contain 0.3 percent or less of Total Delta-9 Tetrahydrocannabinol (THC) (also known as Hemp) and products that contain more than 0.3 percent of Total Delta-9 (THC) (also known as cannabis, marijuana or marihuana).

2.XX.X. Unit

(a) Volume – Products offered for sale in liquid form shall be sold by volume.

(b) Weight – Products offered for sale in non-liquid form shall be sold by weight. These products may also have a supplemental declaration of count or measure.

2.XX.X. Sale from Bulk

(a) When sold from bulk, all sales shall be based on net weight or net volume.

(b) When liquids are offered for sale from bulk, the reference temperature for measurement shall be 20 °C (68 °F). Products shall be delivered at a temperature within ± 2 °C (5 °F). Artificially heating liquids to temperatures higher than the specified limits is prohibited.

2.XX.X. Water Activity – When unprocessed *Cannabis*, is kept, offered, or exposed for sale, sold, bartered, or exchanged, or ownership transfers, the water activity shall be 0.60 (± 0.05) in accordance with latest version of ASTM D 8197, Standard Specification for Maintaining Acceptable Water Activity (a_w) Range (0.55 to 0.65) for Dry Cannabis Flower Intended for Human/Animal Use.

(Added 20XX)

NIST OWM Detailed Technical Analysis:

Conflict in Law or Regulation

The potential for conflict may be highest in states that have separate agencies with authority to regulate all aspects of cannabis sales. Directors in these jurisdictions may be concerned about the possibility of a conflict in law if cannabis definitions and other regulations are added to either of the uniform regulations. This would be especially true if the regulations were not identical to other state agency's regulations already in effect. Another potential problem may arise if a State's law does not allow cannabis to be sold for either recreational or medical purposes where the addition of requirements, for example a method of sale or label regulation, may be mistaken by a reader to permit cannabis to be sold because it is now included in state regulations. To avoid this situation a state director may use the state's administrative rulemaking procedure to "reject or modify" the conflicting provisions of the uniform regulations but that process may take several months. If the survey reveals that adoption of some of the cannabis regulations may create these types of conflicts, OWM believes a simpler approach of removing the conflicting laws or regulations may be worth considering. One option is to have a note placed at with each cannabis regulation so that the enforcement of any conflicting requirement found in a uniform regulation would automatically be permanently suspended. Below is a drafted language based upon NIST Handbook 44, General Code G-N.1. Conflict of Laws and Regulations which establishes the specifications, tolerances, and other technical requirements for weighing and measuring devices and where occasionally conflicts arise where safety or other regulations are in effect:

> ***NOTE: Conflict of Laws and Regulations. – If any particular provision of the requirements in this section or subsection (include the section or subsection here for exactness) are found to conflict with existing federal or state laws or regulations (i.e., sale of cannabis is prohibited) or local ordinances relating to the definition, labeling, potency or other requirements for cannabis or cannabis containing products, the enforcement of such provisions shall be permanently suspended. Such suspension shall not affect the validity or enforcement of the remaining provisions of any other requirement in this regulation.***

Current Authority in Weights and Measures Law

The survey may also reveal that a director has advisement from legal counsel that the State's weights and measures law does not give the state director authority to regulate the types of cannabis labeling. If the Committee determines this is the case, regardless on the number of states, amended language will be required to the Uniform Weights and Measures Law to add the needed authority. OWM has drafted a new subsection (r) to add the appropriate regulatory authority to promulgate a variety of cannabis requirements to the Uniform Weights and Measures Law as was done for the price verification procedure in 1995. The following draft has language to reflect that the Director has the authority to set variations for potency, ingredients, warning labels, water activity and moisture loss or gain permitted when current good manufacturing and distribution practices are followed. If the Committee uses this draft, it could then add additional areas of responsibilities in this emerging area of weights and measures regulation.

Be advised that OWM draft language omits references to "intrastate commerce" because when that provision is applied in conjunction with the terms and definitions in Section 12.1.2. "Variations Resulting from Exposure" in the UPLR, which reads that "so long as" the packages are in the control of the packager or person who introduces the packages into intrastate commerce that reasonable variations in net quantity caused by the loss or moisture loss or gain shall not be recognized, likely conflict the Federal Food, Drug and Cosmetic Act and regulations published by the FDA. This is a complex legal issue and would require too much space to fully explain but the issue was discussed in the NIST Handbook 133 Working Group

many years ago and the consensus at the time among officials was that all packaged products should be treated the same regardless of whether they are in "intra-state" or "interstate commerce."

OWM is trying to foresee potential problems with these proposals and is offering solutions that may allow for the adoption at the NCWM Annual Meeting. OWM recommends adding another Section in (2) which would allow the director to utilize accredited laboratories to perform testing when the states weights and measures laboratory does not have the capabilities. It also grants the director authority to employ a conformity assessment program. This could be a program where companies are inspected and accredited by a competent party, such as ASTM, who maintain accreditation and are subject to random audits to ensure compliance. This would allow the director to rely on alternative approaches instead of having their state metrology laboratory to obtain equipment and testing expertise they may not possess.

OWM believes that in the future weights and measures inspections will also need to employ increased interstate cooperation among weights and measures programs as well as conformity assessment, and accreditation programs to supervise the new ways commercial measurements are utilized. We see an increase of goods being delivered to homes directly from remote shipping facilities. The testing of prepackaged goods for testing will decline and that may lead to the need for states to reach out for assistance from other jurisdictions to investigate complaints. Assistance will be required to go into distribution points or point of pack to test packaged goods or assist in evaluating whether current good manufacturing practices are in place or to help in resolving moisture loss (or gain) issues.

Utilizing accreditation programs to ensure products compliance are currently in use around the world. An example of this is the U.S. Consumer Product Safety Commission (CPSC) having oversight of toys sold in the U.S. marketplace. The use of such systems would empower programs to focus on supervising the marketplace and using risk assessments and audits to oversee far more than is possible with today's resources. OWM often hears weights and measures plays catch-up instead of actively participating in the development of new areas of commercial weighing and measurement. One way to take a larger step in any field of weighing and measurement is to be able to provide leadership and marketplace supervision using new approaches and looking for opportunities in the emerging areas of legal metrology regulations (e.g., electric vehicle charging systems and GPS transportation systems). Recognizing these options would be a good first-step for cannabis.

OWM also recognizes that regulation of cannabis packaging is different than other packaged products in the marketplace. Current authority for weights and measures regulations typically cannot prescribe the type and color of packaging, the use of production codes, manufacture date, warning labels cannabis symbols, or other requirements. UPLR regulations cannot dictate whether the product can look like candy or baked goods or whether labels can display a picture of a cartoon character. But those aspects are part of the regulatory powers given to cannabis regulatory agencies in many states, and those local requirements vary depending on whether the state legislature allows recreational use or only medicinal use cannabis. In most jurisdictions only the legislature can grant enforcement authority to regulatory agencies and sometimes there is overlap.

There are numerous examples from the past that show conflicting requirements and inspection procedures can be avoided through cooperation. Most states that have a Department of Agriculture also have a state chemist and seed control laboratory, that have regulatory authority to prescribe net quantity of contents requirements. They work closely with the weights and measures division for guidance and assistance in ensuring that labeling regulations are consistent. The inspectors who carry out inspections have the authority as well as the training and equipment to perform the inspections and tests properly and uniformly.

PALS -22.1. Section 2. Definitions 2.XX Cannabis and Cannabis-Containing Products.

OWM recommends that the definition in 2.X.X. **Cannabis and Cannabis-Containing Products** be reordered to provide clarity and readability so that the 0.3 percent or less value wording appears first and the more than 0.3 percent wording appears second. OWM recommends also that the word "percent" and not the symbol be used; that the word "definition" be substituted for section; and that "contains" be used instead of containing.

OWM proposed rewording for the definition of Cannabis found within the UPLR:

> **2.XX. Cannabis and Cannabis-Containing Products – Cannabis is a genus of flowering plants in the family Cannabaceae, of which Cannabis sativa is a species. This definition includes products that contain 0.3 percent or less of Total Delta-9 THC (also known as Hemp) and products that contain more than 0.3 percent of Total Delta-9 THC (also known as Cannabis, Marijuana or Marihuana).**

OWM recommends that consideration be given for the OWM proposed language in B3: PAL-22.1 and recommend it as a Voting Item.

B3: PAL-22.2 Section 10. Exemptions, 10.XX Cannabis and Cannabis-Containing Products

The application of this section is clearly stated that it only applies to products that contain cannabis, so no exceptions need be included. OWM recommends that 10.XX be revised as shown below.

> **10.XX. *Cannabis* and *Cannabis*-Containing Products- Any *Cannabis* or *Cannabis*-containing products, ~~with the exception of commodities listed under Section 10.9 Textile Products, Threads and Yarns and other non-food products not intended for human or animal application,~~ shall bear on the outside of the package the following:**

OWM submits the following questions to the Committee about how this regulation is to be interpreted and enforced:

"Shall Bear on the Outside of the Package…"

Weights and measures regulations for declaration of identity and net quantity of contents require specified information to appear on the principal display panel. The declaration of responsibility may appear anywhere on the package. On this proposal the "declarations" are required to appear "on the outside of the package." This is a new placement requirement, and for future reference, it would be helpful if the submitter provide a complete explanation as to why it requires a placement outside the requirement. OWM assumes this is a specific prohibition against putting any of the required information on the package, where it is in anyway obscured (on inner wrappings or behind a peel-up label such as you see on bottles of pain medication is not allowed). Are we correct in understanding this requirement to mean that no exemption will be allowed? If that is the intent, it would help if the Committee added that to the historical record of the conference reports. They should indicate the submitter did not intend to allow any of information required under this section to be obscured in any way or presented on "easily" accessible inner labeling? We are asking for clarification because a similar question came up in a meeting with a cannabis packager who wanted to know some of the other information required under the UPLR information could be placed inside the package where it was still "easily" accessible like the peel-up labels consumers see on bottles of aspirin.

"Contains Cannabis"

In trying to understand how the requirement in Section 10. Exemptions, 10.XX Cannabis and Cannabis-Containing Products will interact with other requirements within the UPLR we referred to Section 3.1. "Declaration of Identity – Consumer Package" which requires a package to have a product identity on the principal display panel. The name for the product must be as listed in federal or state law, or the common or usual name or a generic name. The proposal reflects an ingredient labeling requirement that requires the words "Contains "*Cannabis*" to be shown somewhere on the principal display panel. As the area of the label on small packages is already limited OWM asks the Committee if any consideration would be given to making this ingredient statement optional, if the product identity includes the term "*Cannabis"?*

Will placing the Delta-9 THC potency information on the bottom of the package or bottle be permitted?

One frequently asked question in labeling compliance is "may the declaration of responsibility (or other) information appear on the bottom of the box or bottle?" If it is acceptable for the potency or mg/serving information to appear on the bottom of the box or bottle the current language certainly permits that. If the Committee does not intend to permit any of the required information to appear on the bottom of the box or bottle OWM recommends that a specific prohibition to the regulation be added.

It is not clear as to what this proposal is trying to accomplish with regard to the exemption, making it difficult to assess the proposal. If the exemption is intended to apply to non-food products, then simply exempting non-food products would be sufficient. Without any other rationale to justify including it, referencing Section 10.9. Textile Products, Threads and Yarns adds unnecessary complexity to the requirement., making it difficult to assess the proposal. If companies are claiming or referencing clothing or other products has having "cannabis" in it/them, what is the intent of doing so? Are companies trying to imply some advantage or benefit? If so, how is the consumer to assess that benefit or advantage? Without such assessment criteria, might such claims be considered misleading?

We question how an inspector, or a company know when the exemption would/would not apply? It is not clear what is mean by the reference to "application." This term needs to be better defined or explained. Does this include consumption? If so, might a better reference be "consumption or application?" If the intent is to only apply the requirement to "products for human consumption or application" then a simpler alternative might be to simply limit the paragraph accordingly. For example, "Cannabis and Cannabis-Containing Products Intended for Human Consumption or [Application].

Possibly the submitter can provide an additional background information or a justification explaining the rationale. Is this is needed in order for officials and industry to make an informed decision on the proposed requirement?

Some additional comments and suggestions.

- If the NCWM Cannabis Packaging and Labeling TG is disbanded, we recommend that PALS be the appropriate SME's to develop and research labeling for cannabis.

- In the proposal the term *Cannabis* is italicized. As mentioned in the OWM comments on Block 3. when readers see terms presented in italics in a regulation, they may interpret that to mean the same text also has to appear on the package label in italics. It may help to reduce confusion if the Committee makes it clear whether the term must appear on the package label in italics or not.

Test Methods

When adopting a regulation that requires packers to have the THC levels displayed on their packages it is essential that the Committee provide information on the acceptable test methods to be used for enforcement. When placing any regulation of this type, the States (as well as the cannabis industry), must be able to test and verify the labeled claim or the regulation will not provide the intended protections. OWM agrees this is an essential labeling requirement for this commodity and believes enforcement will be critical for use in ensuring safety and preventing fraud and unfair competition. To see why this regulation is justified the Committee should review the type of problems FDA is finding with CBD labeled products and strength claims at **Warning Letters and Test Results for Cannabidiol-Related Products | FDA**).

After reviewing the 2022 Interim L&R Report OWM is recommending formatting changes that is easier to follow and apply. These changes also correct grammar within the current proposal (e.g., line 14 states "less that").

OWM has previously noted the term *Cannabis* being italicized. Is a requirement that it this term appear an italics style? If so, OWM recommends that the Committee add a statement to (a)(2). The word *Cannabis* shall appear in capitalization and italics style. If it is permissive the term "shall" could be replaced with "may"

10.XX. *Cannabis* and *Cannabis*-Containing Products – A *Cannabis* or *Cannabis*-containing product that is intended for human or animal consumption or application, the following information shall appear on the outside of the package:

(a) On the principal display panel

(1) a statement "Contains *Cannabis*";

(2) a statement with either "contains less than 0.3 % total delta-9 THC" or "contains 0.3 % or more total delta-9 THC"; and

(b) On the back or side panel

(1) a declaration of the labeled cannabinoid per serving or application; and

(2) the quantity declaration shall be in terms of milligrams.

Cannabis Formatted as Italicized Text

Within the proposed section title, the term Cannabis is italicized. When label designers see terms presented in italics in a regulation, they may interpret that to mean the same text also has to appear on the package label in italics. It may reduce the chance for confusion if the Committee makes it clear whether the term Cannabis must appear on the package label in italics or not.

This type of issue occurred in the 1960s when the Federal Trade Commission (FTC) published their first regulations under the FPLA. FTC submitted the regulations to the Government Printing Office (GPO) with the symbol and abbreviations for units without periods. To address the concerns of the packers on limited package spacing the drafters felt that excluding the "period" would provide packers additional space they required. The misstep was the GPO editors applied government publication formatting and applied the period on all the symbols for units as abbreviations. The rules were published, and periods were added to labels because of how they were expressed within the regulation, even though a separate section stated

"periods" were optional. A lesson learned that if you put a term in a regulation in "italics" lawyers, label designers, and inspectors may interpret the regulation as it "shall" be shown on the label in that formatting style.

OWM recommends this proposal as modified and that the requested survey of states be included as part of the Committee report. OWM recommends survey questions be presented to state directors promptly. This will allow adequate time for them to consult with legal counsel and provide their responses to the NCWM prior to the 2023 Interim Meeting. With all of the information identified above and the OWM recommended modifications, we recommend it as a Voting Item, if not we recommend it as either Developmental or Informational.

B3: MOS-22.2 – Section 1.XX. Cannabis and Cannabis-Containing Products and 2.XX. Cannabis and Cannabis-Containing Products.

OWM recommends that the Committee move only partial sections of this proposal forward as a Voting Item. The Committee will need additional time to address the requirements for limits on water activity, in additional answers to whether the state director's authority under the State's weights and measures law extends to promulgating the labeling requirements (e.g., warning statements, potency, ingredients and water activity) (see NIST OWM Comments in B3: PALS -22.1. Section 2. Definitions 2.XX Cannabis and Cannabis-Containing Products.").

As noted in the OWM comments on Block 3, we also highlighted below Item B3: PAL-22.1, water activity is associated with product quality and must be controlled by the packer of foods, drugs, and cosmetics to maintain product consistency and quality, and to avoid mold or product spoilage. These are health, safety, and other quality characteristics. The fundamental purpose of weights and measures laws is to ensure that declarations of **quantity** are accurate so consumers can make price and quantity comparisons which ensures ensure equity and fair competition in the marketplace. Both Federal and State packaging and labeling laws require that reasonable variations in **quantity** caused by the loss or gain of moisture must be allowed if they increase or decrease the **quantity** of a desiccating product. Weights and measures law do not define how much moisture a product must contain but only how the loss or gain of moisture changes the **quantity** beyond reasonable limits. The laws were written to prevent economic fraud and typically do not to give weights and measures directors authority to expand inspection programs into other areas of regulation such as food safety or quality. Therefore, in general, weights and measures inspectors do not enforce ingredient, potency, drug content, safety labeling, and water activity on other products in the marketplace solely under labeling authority granted under their current weights and measures laws.

The Committee should request the NCWM Cannabis TG and the cannabis industry, and trade associations provide scientific studies and other information to justify and validate the limits of water activity requirements stated within the proposal. The Committee can have the data evaluated by a qualified panel of experts who could also assist in developing the justifications and technical language in the regulations. It is important to have due process and that growers, packers, distributors, retailers, and other stakeholders have adequate notice and an opportunity to comment on the water activity limits especially when violations of any regulations promulgated by the state may involve civil or criminal penalties including imprisonment. In developing of any law or regulation, it is important to balance the risks to consumers against the potential penalties. Consideration should be given for alternative approaches in addressing the problems caused by water activity, in lieu of criminalizing violations to control product potency or prevent spoilage. In all scientific procedures there are measurement uncertainties that should be consideration before a person is exposed to criminal or civil prosecution. For these reasons, OWM recommends that the Committee seek

out expert advice and establish reliable tolerances for water activity measurements to ensure both due process and fairness.

The Committee should also seek expert assistance in developing the inspection and sampling procedures necessary to carry out enforcement, in addition to providing guidance to the States on appropriate test procedures. If field testing is contemplated, guidance on test equipment specifications and tolerances must be developed. When setting equipment specifications and tolerances, consideration should be given to NIST Handbook 44, Appendix A. Fundamental Considerations, Section 3. "Testing Apparatus." In addition, the state metrology laboratory will need to be training and equipped to certify the devices used in field inspection. These important components should be developed and included with the water activity proposal before it is submitted for consideration to the NCWM. When a water activity limit is adopted, the states will be then be prepared to implement inspections and enforcement.

This will allow the work to be closely integrated with the L&R Committee and allow the Committee to better lead in its development of the water activity and moisture loss and gain projects. This will also allow for coordination in the development of the field inspection sampling and laboratory testing programs that will be required.

- In addition, adding a recognized moisture test procedure a detailed set of instructions for selecting and handling the moisture samples will need to be provided. If an inspector seizes samples for testing, they will need to follow good sampling procedures and handling practices to ensure the samples are protected and stored properly prior to and after testing. If there are legal or other restrictions that apply to the seizure, handling, storage, or transportation of cannabis samples then these can be included in the instructions to assist the inspector.

- Water activity is not unique to Cannabis. Many (e.g., food) products have water activity that is needed to ensure quality and maximize shelf life. Water activity helps minimize texture changes, chemical reactions, and microbial spoilage. Throughout the history of state weights and measures, it has not been under the authority of weights and measures to ensure compliance of commodities to ensure quality (texture changes, chemical reactions, and microbial spoilage). When a Cannabis product spoils, is the intent to call weights and measures in to investigate?

- The role, authority, and ability to carry out compliance by state weights and measures needs to be considered before adoption. Will proactive compliance testing be done, audit testing or will this be done on complaint only basis? It is clear to W&M as to the purpose. Consideration also needs to be given to how sampling will occur, how the lot is determined and whether a sample or the entire lot will fail. What are weights and measures protecting consumers and businesses from?

- The Item Under Consideration 1.XX.X. only specifies an upper limit of 0.65. Water activity contains a lower limit of 0.55 as well. If water activity is of concern, both the upper and lower limit should be addressed.

Water activity can change at any point during the supply chain, typically due to improper storage. Ultimately, it must be considered who will be held as the responsible party… the packers, distributor, seller, and whether specific requirements be added to ensure proper storage (e.g., relative humidity controls)?

WATER ACTIVITY (additional comments are in Item B3: MOS-22.2)

OWM's comments are based in part on the following:

- "Water activity is different from water content (or moisture content), which is a measure of the total amount of moisture in a material and is usually expressed as a percentage of the total amount (% of total weight)."[1]

- Water activity is a primary concern in food safety. While water activity has a relationship to moisture content but "moisture content does not correlate as well as water activity with microbial growth, chemical stability, or physical stability."[2] However, "water activity and moisture content are related through the moisture sorption isotherm."[1]

- The only reason weights and measures officials are concerned with moisture content is in determining whether variations in the net weight of packaged goods due to the loss or gain of moisture are reasonable. Weights and Measures has not historically enforced product quality. If product quality is going to be enforced, then it is likely the additional requests will made by industry for Weights and Measures to enforce water activity in other commodities as well.

- To define water activity and put the proposed water activity limits within context with other products (here the proposal requires the water activity of unprocessed cannabis to be 0.6 ± 0.05 whenever it is sold, or ownership transferred) OWM presents the following. The FDA defines the "water activity of a food is the ratio between the vapor pressure of the food itself, when in a completely undisturbed balance with the surrounding air media, and the vapor pressure of distilled water under identical conditions. A water activity of 0.80 means the vapor pressure is 80 percent of that of pure water."[3] FDA further explains that "most foods have a water activity above 0.95 and that will provide sufficient moisture to support the growth of bacteria, yeasts, and mold. The amount of available moisture can be reduced to a point which will inhibit the growth of the organisms." FDA explains that if the water activity of food is controlled to 0.85 or less in the finished product, it is not subject to the FDA regulations (see **21 CFR § 108 "Emergency Permit Control**," **§ 113 "Thermally Processed Low-Acid Foods Packaged in Hermetically Sealed Containers**," and **§ 114 "Acidified Foods**."[3])

- It should also be noted that all states that have regulations regarding Cannabis require that the water activity may not exceed 0.65. On the contrary, none of these states require a minimum of 0.55 in their regulations. This implies that states are only concerned with mold growth and its potential safety affects, and not dehydration.

OWM recommends that the Committee or Cannabis TG provide a document that includes specific citations to the studies and references or to the industry standards (e.g., ASTM) and the recommendations of the U.S. Pharmacopeia as these important references will be needed for the foreseeable future to allow for the development for use in developing training and in assisting the states in adopting enforcement policies and even test equipment requirements.

[1] See **https://pccarx.com/Blog/why-water-activity-matters-in-pharmacy-compounding-rssid** (Accessed 1/3/2023). Providing this URL to this commercial website does not mean that NIST endorses any product or service advertised on that website. This information is provided to assist the Committee in its consideration of this proposal.

[2] See: "The What, How, and Why of Water Activity in Cannabis (**https://www.cannabissciencetech.com/view/what-how-and-why-water-activity-cannabis or https://www.cannabissciencetech.com/**)" (Accessed 1/3/2023). Providing this URL to this commercial website does not mean that NIST endorses any product or service advertised on that website. This information is provided to assist the L&R Committee in its consideration of this proposal.

[3] **Water Activity (aw) in Foods | FDA** (accessed 1/3/2023)

It is important to note the FDA statement "water activity increases with temperature."[1] Since there is a strong connection between these two factors OWM recommends that the proposal be amended to include suitable storage temperature and humidity limits wherever unprocessed cannabis is sold or ownership transferred. Further, consideration should be given to requiring sellers and processors to maintain and share this type of data with inspectors during inspections because it may prove invaluable to the inspector in determining if the variations in water activity and quantity due to the loss or gain of moisture are reasonable. Many other factors including the product's natural moisture content and consistency impact moisture content and time and air flow also impact the rate of moisture loss (as do temperature and humidity) but none of those factors are typically subject to regulation by weights and measures regulations. However, OWM acknowledges that for cannabis, especially if water activity limits are adopted into regulation storage area humidity and temperature may be justified and critical in helping the cannabis industry to avoid violations. It appears these would fall within "Current Good Distribution Practices" which must be met under both Federal and State packaging laws for other package requirements when reasonable variations must be allowed.

When the current moisture allowances for many other under consideration by the NCWM there was no discussion or intent to establish water activity limits or specific moisture content limits for flour (typically 12 to 14 percent), pasta (31 to 32 percent during its plastic state when under production) or even meat and poultry products which may contain between 60 to 73 percent water. In part this is because weights and measures laws do not typically grant the director the authority to establish the moisture content limits for foods, drugs, or cosmetics. OWM recommends that Committee clearly state that weights and measures inspections to be conducted under this proposed regulation will limited to only cannabis (plant) that there is no intent to expand it products that contain cannabis. This statement of intent early in the consideration process may be helpful to future readers of the historical record.

"When unprocessed *Cannabis* is sold, or ownership transferred"

OWM recommends that the Cannabis TG or Committee clarify how the language shown above is to apply in the real world that inspectors work in. OWM also recommends that the Cannabis TG or Committee provide examples of how an inspector is to enforce the water activity requirement without interfering with a commercial transaction. This may not be the submitter's intent but as written and inspector cannot perform a water activity inspection of the cannabis until it is sold, or ownership transferred. That appears to put the inspector in a position of waiting until a commercial transaction is completed before compliance with this requirement is determined. Dependent on the time between the sale and inspection it raises potential challenges for the inspector because the buyer may have exposed the cannabis to mishandling or high temperatures. The water activity violation may be the fault of the buyer not the seller.

Enforcement problems like this arose frequently in the early years of package control when some legislatures passed similar legislation where the requirement for accurate net weight only applied to packages that had been sold. Under the laws written that style many states were left without the authority to inspect and test packages that were kept, offered for exposed for sale or sold until their legislatures amended these types of laws.

To ensure that inspectors have the authority to inspect products kept, offered, or exposed for sale or sold OWM recommends that the Committee consider amending this requirement as follows:

> **2.XX.X. Water Activity-When unprocessed *Cannabis*, is kept, offered, or exposed for sale, sold, bartered, or exchanged, or ownership transfers, the water activity shall be 0.6 (± 0.05). Unprocessed *Cannabis* is in compliance with this requirement unless the water activity is less than 0.55 or greater and 0.65.**

This language will ensure consistency with that in the NIST Handbook 130, Unform Weights and Measures Law under Section 11 "Powers and Duties of the Director" and will help ensure that this requirement can be effectively enforced at all levels of cannabis distribution and in any of the described transactions. OWM also recommends that the accuracy statement be clarified to clearly state the plus or minus values that must be exceeded for a violation to occur.

Summary of Discussions and Actions:

At the 2022 NCWM Interim Meeting some members expressed support for this block to be Voting status. They remarked that without this language, people were creating fraud in the marketplace by ripping consumers off with short-weight sales." The Arizona Dispensary Association supported moving this item forward as a Voting Item and stated that it is a 1.4 to 1.5-billion-dollar industry in Arizona. Mr. Charles Rutherford (CPR Squared and Co-Chair of the NCWM Cannabis TG) supported moving this item forward as a Voting Item. He further stated that bad actors can manipulate the drug and sell underweight flowers. He also indicated that education and training was needed, and that regulation was critical to ensure that consumers were not being shorted. The American Trade Association for Cannabis and Hemp (ATACH) stated it was an important next step for regulating the industry.

Dr. Lippa (NIST OWM) responded to general comments and answered questions that were posed to OWM as to what OWM can do with language within the NIST Handbooks. Dr. Lippa stated that OWM is in discussion with NIST Office of Chief Counsel regarding the cannabis agenda items at NCWM.

There are a few things for NIST related work: development to standards materials, high and low THC, and standards. There needs to be a distinction of the THC level that is regulated by the Farm Bill and the Controlled Substance Act (CSA).

According to the CSA, high THC marijuana is an illegal drug and NIST cannot support guidance, training, and standards Recognizing this issue, NIST will be able to publish Handbook 130 with this item, but they will have to provide a disclaimer citing the CSA. OWM is in communication with NIST legal counsel on this matter and will continue to work and advice with NIST legal.

The Committee assigned Voting status for this item at the 2022 NCWM Interim Meeting.

The Committee heard unanimous support for this item from Regulators and Industry who shared the need for it.

At the 2022 NCWM Annual Meeting, the Committee heard comments on each individual item in the Block. The Committee heard support for this item from the Co-Chair of the Cannabis Task Group and Mr. Matt Curran (Florida).

B3: PAL-22.1 Section 2. Definitions 2.XX *Cannabis* and *Cannabis*-Containing Products.

The Committee received requests for changes from Mr. Joe Moreo (Trinity County, California). He requested and the Committee amend the proposal and include additional species of *C*annabis be included. This change was made by the Committee, and they added "*indica, ruderalis* species and any "hybridization thereof" to the definition of Cannabis and *Cannabis*-Containing Products. The Committee also removed the capitalization of the words cannabis, marijuana, and marihuana. The Committee spelled out the acronym for "THC".

Mr. Sefcik also provided comments from the NIST Executive Summary.

B3: PAL-22.2 Section 10. Requirements, 10.XX *Cannabis* and *Cannabis*-Containing Products.

The Committee removed the italicization of letter "C" in word "Containing" and made an editorial change to the language specifying the level of Total Delta-9 THC to harmonize with other sections.

The Committee changed the roman numerals to numerical and separated out paragraph (b) into 1 and 2.

The Committee considered the testimony from Mr. Sefcik and the NIST OWM Analysis provided to the Committee and published on the NCWM website.

Mr. Sefcik also commented OWM still had concerns with "*Cannabis"* being italicized. It is not clear whether this is a requirement that the term "Cannabis" appear in italics style for packaging and labeling requirements, as stated in the proposal. As written, it could easily be implied that italics is required on all packages, and if required as part of labeling, is should explicitly say so. If not, it should clearly be stated that italics format is not required, or remove the italics format from the proposal, as to not cause confusion. As currently written, it can easily be implied capitalization and italics of the word cannabis is required on labeling.

Lastly, there are grammar corrections needed to line 3 which states "less that" rather than "less than" and subsection (b) in Line 5, uses the term "marketed" rather than "labeled".

Dr. Matthew Curran (Florida) supported the editorial change of italicizing and capitalizing "*C*annabis". Mr. Austin Shepard (San Diego County) supported the change to "Contains 0.3% or less Total Delta-9 THC" or "Contains more than 0.3% Total Delta- 9 THC." The Committee changed the roman numerals to numerical and separated out paragraph (b) into 1 and 2.

The Committee also considered the written NIST OWM analysis provided to the Committee and published on the NCWM website. They also made several grammar and formatting changes throughout the proposals:

B3: MOS-22.2 Section 1.XX. Cannabis and Cannabis-Containing Products and 2.XX. Cannabis and Cannabis-Containing Products.

Mr. Sefcik also provided comments from the NIST Executive Summary as to why it is unnecessary for an item to be added to the method of sale regulation. A few high-level points are noted, and additional technical information can be found in the NIST OWM Analysis:

- Uniform Weights and Measures Law, Section 16. Method of Sale, as well as the Uniform Packaging and Labeling Regulations, Sections 6.4. Terms: Weights, Measures, Volume or Count, specifies unit requirements for food and nonfood products. The MOS regulation typically defines unique commodities that fall outside the norm of how a particular commodity must sold. Cannabis is not a unique commodity.

- It is not necessary to define cannabis because it has a known standard of identify. Without the need to add a definition this leaves only the portion related to water activity (a_w). Water activity is used to measure the growth of microbes using ASTM D8197-21 – Standard Specification for Maintaining Acceptable Water Activity (a_w) Range (0.55 to 0.65) for Dry Cannabis Flower Intended for Human/Animal Use which covers the water activity for safe cannabis storage. It is also used to identify the potency (THC level).

In many states water activity testing would be conducted by an agency, other than weights and measures. Outside of fuel quality most weights and measures programs do not inspect and enforce quality and safety of most consumer commodities. W&M strives for equity in the marketplace but has not been involved with the health and safety side of commodities.

- Another consideration is the cost to purchase equipment. OWM notes that many state package checking inspection activities are not fee supported and would not be generating income by charging fees.

The Committee made the following changes:

- Harmonized the language in PAL 22.1 and MOS 22.2. Definition for Cannabis. In MOS-22.2 the definition for water activity was replaced with a reference to ASTM D 8197. The Committee also removed examples of product types that were provided.

- Replaced the word "quantity" to "volume" in Sections 1.XX.X (a) and 2.XX.X.(a) Sale from Bulk. In 2.XX.X Water Activity was changed from 0.6 to 0.60. The Committee added a reference for the ASTM Water Activity test method. The Committee included additional species into the proposal.

Regional Association Reporting:

Western Weights and Measures Association

At the 2021 WWMA Annual Meeting, Ms. Hahn expressed concern with percentages of THC were of a more qualitative nature and not necessarily within the purview of weights and measures. Mr. Kurt Floren (Los Angeles County, California) addressed the comments and concerns on quality issues as a general matter is not our purview in weights and measures. He mentioned how quality issues are a purview of weights and measures in matters of fuel with octane levels and viscosity of oils that must meet standards. He mentioned that this would be similar in Cannabis, in that THC levels are a part of the identity of the product, and that it is an important component in determining the value and allowing for value comparison. Mr. Floren stated that States are in different stages of regulation, and there is going to be a need for uniform standards. Mr. Charlie Rutherford (Co-Chair of Cannabis TG, CPR^2) that cannabis is an industry with a high black-market value and that it is unique with regards to water activity and that are needed to help avoid manipulation. Ms. Cadence Matijevich (Nevada) provided testimony that the State of Nevada's Department of Agriculture does not have authority over cannabis packaging and labeling regulations, that it is under the purview of the Nevada Cannabis Commission. Mr. Joe Moreo (Trinity County, California) provided testimony that different species including Cannabis indica and Cannabis ruderalis should also be provided in the definition. Ms. Lisa Warfield (NIST OWM) provided testimony that was based on the OWM Analysis that was submitted as the supporting documentation.

The Committee recommends this Item be Assigned to the Cannabis Task Group. We recommend the NCWM L&R Committee consider the following:

- The need to establish an authority in the Uniform Weights and Measures Law to provide jurisdictions with authority to enforce the proposed regulations.

- Conduct outreach to state authorities and the industry groups to gain a deeper understanding of the issues pertaining to this item.

- Conduct a survey of the jurisdictions, where the following items are addressed:

- Have Directors consult with their department's attorney to determine if adding the definition and other Cannabis proposed requirements to the uniform packaging and labeling regulation or method of sale for commodities regulations will cause a conflict with other state laws or regulations.

- Establishing the method of sale by weight and establishing minimum load requirement to NIST Handbook 44 are of course within weights and measures authority but some of the labeling and method of sale requirements may not be within the current regulatory authority of some weights and measures programs.

- The most significant question is if state's weights and measure law authorize the director to adopt rules and regulations that require ingredient labeling, safety warnings, potency declarations and if they allow the director to establish and enforce water activity limits and verify potency labeling.

The Committee recommends that the TG consider altering the definition of "Cannabis and Cannabis Containing Products" utilizing the minor edits presented in the OWM Analysis supporting documentation. The Committee also recommends including the comments from Mr. Joe Moreo during open hearing testimony that other species of the Cannabaceae family such as, Cannabis indica, and Cannabis ruderalis may need to be included in the definition.

> **2.XX. Cannabis and Cannabis-Containing Products** – Cannabis is a genus of flowering plants in the family Cannabaceae, of which Cannabis sativa, Cannabis indica, Cannabis ruderalis ~~is~~ are ~~a~~ species. This definition includes products that contain 0.3 percent or less of Total Delta-9 THC (also known as Hemp) and products that contain more than 0.3 percent of Total Delta-9 THC (also known as Cannabis, Marijuana or Marihuana).

The Committee recommends that the Cannabis TG consider altering the proposed language for this item. The intent of the item and the language is unclear, and the Committee recommends that the Cannabis TG review the language and the questions posed in the OWM analysis supporting documentation, to clarify intent and comprehensively address exemptions.

MOS 22.2- The Committee feels that this item is mostly developed but has concerns regarding the parts that address water activity. The Committee recommends that Cannabis TG review the OWM analysis supporting documentation and address questions regarding water activity including test procedures.

At the 2022 WWMA Annual Meeting, Mr. Charles Rutherford (Co-Chair NCWM Cannabis TG) wanted to remind jurisdictions that did not vote on this item that it is important both to jurisdictions that need Cannabis regulations, and the item also includes Hemp regulations that are needed by many states. Mr. Kurt Floren (Los Angeles County, California) supports this item moving forward with an editorial change:

PAL-22.2 - **10.XX (b) (2) the cannabinoid quantity declaration shall be in milligrams**.

Mr. Kevin Schnepp (CDFA DMS) supported the item moving forward as a Voting Item with Kurt's edit. Based on the testimony heard, the WWMA L&R Committee recommends this item for Voting status.

Central Weights and Measures Association

At the 2021 CWMA Interim Meeting, Mr. Doug Musick (Kansas) commented **CFR 990.1** defines total delta 9 THC. Mr. Loren Minnich (Kansas) commented that Kansas defines Cannabis in a way that allows the sale of a different compounds similar to cannabis, and he thinks it should be considered in the

development of this item. Dr. Matt Curran (Florida regulator and member of the NCWM Cannabis TG) commented that the USDA CFR reference of total delta 9 applies to growth of crops only. Dr. Curran further commented that the term cannabinoids reference a broader group of products since states vary. Ms. Warfield commented that there are already regulations that can apply to the sale of any item, but each product is not listed. There are also package and labeling regulations currently in the handbook. OWM requests that states provide input to NCWM as to whether adding definitions would be problematic or conflicting within their states. Ms. Warfield further commented that new language was submitted through WWMA and NEWMA, and that the CWMA L&R Committee consider these changes. She asked that the Committee move the water proposal out of Block 3 and consider it separately. Dr. Curran clarified that this item refers to the plant itself – not as an ingredient. He also commented that it is important for the regulatory community to remain relevant in the marketplace by developing code in a timely manner. Mr. Charlie Stutesman (Kansas) commented that he believes waiting on further development puts us even farther behind where commerce currently is. Mr. Ivan Hankins (Iowa) supports the item moving forward with Voting status and suggests the development of a handbook for states who regulate cannabis.

Based on comments during open hearings, supporting documents and discussions, the Committee believes this item is fully developed and ready for Voting status.

At the 2022 CWMA Annual Meeting, Ms. Warfield recommended this as a Developing Item or Assigned to the Cannabis Task Group to obtain additional information that OWM has recommended in their analysis. She read the following statement from NIST OWM.

"Cannabis" Statement from NIST OWM:

As a non-regulatory metrology institute, NIST defers to federal agencies with regulatory authority under the Controlled Substances Act (CSA) for the scheduling of drugs or other substances. NIST does not have a policy role related to the production, sale, distribution, or use of cannabis (including hemp and marijuana).

While the 2018 Farm Bill removed hemp from the list of controlled substances under Schedule 1 of the CSA, marijuana remains on that list. NIST must respect that distinction even as it exercises its statutory authority to develop and disseminate national weights and measures standards for the production, distribution, and sale of products in the commercial marketplace.

NIST remains committed to providing technical assistance to the weights and measures community. OWM has provided key technical points for the community to consider in its deliberations of cannabis-related proposals, and OWM would be happy to provide any necessary clarification. OWM comments are intended to encourage technically sound application of legal metrology laws, regulations, and practices to the measurement and sale of these products.

Ms. Warfield commented on the following:

PAL 22.2 Section 10. Requirements 10.XX Cannabis and Cannabis Containing Products

After reviewing the 2022 Interim L&R Report OWM is recommending formatting changes that are easier to follow and apply. This also corrected some of the grammar (e.g., line 14 states "less that"). In (b) is uses the term "marketed", a proper term would be "of the labeled cannabinoid."

The Committee discussed Ms. Warfield's suggested changes and recommends the item remain a Voting Item with the following revisions to the version appearing on the current agenda:

10.XX. *Cannabis* and *Cannabis*-Containing Products – Any *Cannabis* or *Cannabis*-containing products intended for human or animal consumption or application, shall ~~bear~~ appear on the outside of the package the following information:

(a) On the principal display panel

(2) ~~(i) The~~ a statement "Contains *Cannabis*";

(3) ~~(ii) The~~ a statement with either "contains less than 0.3 % total delta-9 THC" or "contains 0.3 % or more total delta-9 THC"; and

(c) On the back or side panel

(1) a declaration of the marketed labeled cannabinoid per serving or application; and

(2) the quantity declaration shall be in terms of milligrams.

At the 2022 CWMA Interim Meeting, Mr. Doug Musick (Kansas) asked if on line 31 on page 122, the third time the word "cannabis" is used it should be italicized. Mr. Craig VanBuren (Michigan) agreed the word cannabis should be italicized and is editorial in nature. He further commented the item has not changed since the previous vote and is fully developed and ready for Voting status. Mr. Doug Rathbun (Illinois) supports the item moving forward with Voting status. Mr. Charlie Rutherford (ASTM/ NCWM Cannabis Task Group) commented he agrees with the editorial changes for cannabis being italicized and hopes whether states have legalized cannabis for medicinal or recreational use they will make an effort to be informed and participate in voting for these items, as they also include hemp, and the model language will be established prior to future legalization. Based on testimony and previous vetting and development of this item, the Committee concurs this item is fully developed and is ready for Voting status.

Southern Weights and Measures Association

At the 2021 SWMA Annual Meeting the Committee recommended the block proceed with the following language changes:

PAL-22.1

The Committee wants to consider the suggestion from the OWM to change from the symbol for percent (%) to the written word percent. In addition, change the word "section" to "definition". The suggested language would read as follows:

2.XX. *Cannabis* and *Cannabis*-Containing Products – *Cannabis* is a genus of flowering plants in the family Cannabaceae, of which *Cannabis* sativa is a species. This definition includes products containing more than 0.3 percent Total Delta-9 THC (also known as Cannabis, Marijuana or Marihuana) and products containing 0.3 percent or less Total Delta-9 THC (also known as Hemp).

PAL-22.2

10.XX. *Cannabis* and *Cannabis*-Containing Products- Any *Cannabis* or *Cannabis*-containing products, with the exception of commodities listed under Section 10.9 Textile Products, Threads and Yarns and other non-food products not intended for human or animal application, shall bear on the outside of the package the following:

(a) On the principal display panel

(i) The statement "Contains *Cannabis.*"

(b) On any panel or surface of the package

(i) The statement "Contains more that 0.3% Total Delta-9 THC" or "Contains 0.3% Total Delta-9 THC or less."

(ii) A declaration of the number of milligrams of each marketed cannabinoid per serving or application.

MOS-22.2

1.XX.X. Water Activity-When unprocessed *Cannabis*, is kept, offered, or exposed for sale, sold, bartered, or exchanged, or ownership transfers, the water activity shall be 0.6 (± 0.05).

2.XX.X. Water Activity-When unprocessed *Cannabis*, is kept, offered, or exposed for sale, sold, bartered, or exchanged, or ownership transfers, the water activity shall be 0.6 (± 0.05).

The Committee believes this Item Block 3 (B3) is fully developed and recommends it to go to the NCWM L&R Committee with a Voting status. The Committee recommends the Cannabis TG take into consideration recommendations from the OWM analysis, i.e., the survey to State Directors, this could help identify the need for development of items in other sections of the Handbooks, i.e., Powers and Duties of the Director.

At the 2022 SWMA Annual, Mr. Charlie Rutherford (NCWM Cannabis Task Group) and Dr. Matthew Curran (Florida) spoke in support of this as a Voting Item. Ms. Lisa Warfield (NIST OWM) spoke on the topic of packaging and labeling for cannabis and the format to be used in handbooks, regarding italicization in the PDP on the product labeling and whether it's use has been clearly defined. She believes cannabis has a known standard of identity and does not need to be added to the handbooks. She does not believe that a method of sale is needed for this commodity.

Dr. Matthew Curran (Florida) expressed concern over the use of the italicization and terminology, stating that potential legal and taxonomic concerns which could result from not having a required formatting of the labeling. He states the committee needs to decide. He also thinks that method of sale and moisture content should be accounted for.

This is a carryover item that did not pass at the last National meeting and was returned to the Committee. No changes have been made since the last vote.

The Committee wants the National L&R Committee to consider if an implementation date for recommended labeling changes is needed. The Committee recommends this as a Voting Item on the NCWM agenda.

Northeastern Weights and Measures Association

At the 2021 NEWMA Interim Meeting, Mr. Jim Cassidy (NCWM Cannabis WG Co-Chair) commented that these items are fully developed and ready for Voting status. Mr. David Sefcik (NIST OWM) commented that the NIST analysis is comprehensive and was provided to address potential problems with some of the items. Dr. Curran commented that much work has already been done by ASTM and numerous comments have been received to develop these items for model regulation. Mr. Charlie Rutherford (CPR Squared and Co-Chair – NCWM Cannabis WG) commented that the answers to several of NIST's questions and comments have already been addressed and he has sources that can provide additional information.

Ms. Warfield commented that there are typographical errors in the title of these block items. The Committee recognizes and supports the corrections as they appear in the WWMA Report. Ms. Warfield also expressed concern that there are additional areas that appear in the NIST analysis in this block of items that should not be overlooked. Dr. Curran reviewed the recommended changes in the NIST analysis and is agreeable to NIST's proposed changes. Ms. Warfield suggested adding a Section 11. Powers and Duties of the Director, in the Uniform Weights and Measures Laws. Mr. Marc Paquette (Vermont) and Ms. Cheryl Ayer (New Hampshire) have no objections to the proposed changes in the NIST analysis. Mr. Sefcik asked if Section 11 should be its own proposal because it does not fall under UPLR subject matter. Mr. Sefcik further suggested that the word "number" be changed to "quantity" in PAL 22.2.(b) (ii). Mr. McGuire proposed that Section 10.XX. along with the revised wording from Dr. Curran from Section B; Section C wording be changed from "number" to "quantity"; and adding a new Section 11 from the NIST analysis all be revised. Mr. Mike Sikula (New York) expressed concern for states who do not have a cannabis program and do not recognize it yet as a legal substance for commercial sale. He wondered if adding this section to the Method of Sale in Handbook 130 would somehow unintentionally require them to enforce a substance not legal for commerce in their states.

In PAL 22.1, OWM recommends that the definition in 2.X.X. Cannabis and Cannabis Containing Products be reordered to provide clarity. The proposed wording below is recommended by the Committee:

> **2.XX. *Cannabis* and Cannabis-Containing Products – *Cannabis* is a genus of flowering plants in the family Cannabaceae, of which Cannabis sativa, Cannabis indica, Cannabis ruderalis ~~is~~ are ~~a~~ species. This definition includes products that contain 0.3 percent or less of Total Delta-9 THC (also known as Hemp) and products that contain more than 0.3 percent of Total Delta-9 THC (also known as Cannabis, Marijuana or Marihuana.**

NEWMA recommends the following new language for PAL-22.2.:

Section 10. Requirements: Specific Consumer Commodities, Non-Consumer Commodities, Packages and Containers

> **10.XX. *Cannabis* and *Cannabis*-Containing Products – Any *Cannabis* or *Cannabis*-containing products, shall bear on the outside of the package the following:**
>
> > **(a) On the principal display panel**

(i) The statement "Contains *Cannabis.*"

(b) On any panel or surface of the package

(i) The statement "Contains more that 0.3 % Total Delta-9 THC" or "Contains 0.3% Total Delta- 9 THC or less."

(ii) A declaration of the quantity of milligrams of each marketed cannabinoid

(Added 20XX)

MOS 22.2 - Mr. Sefcik commented that there were questions raised regarding water activity and product quality and believes these items should be further considered. Dr. Matt Curran commented that not only is water activity a quality issue, but also a quantity issue just as moisture content is in many other commodities. He commented that ASTM has developed a standard (D8917) for moisture content and water activity and these block items only apply to the cannabis product itself, but not as an ingredient in another item such as brownies, etc. Mr. Sefcik commented that laws and regulations have been written to prevent economic fraud rather than to address quality and safety issues. He believes that water activity could fall under the same quality-related category. He stated that there needs to be test equipment, procedures, and reliable tolerances for water activity measurements for enforcement purposes. The Committee believes this item is fully vetted and ready for Voting status.

NET 22.1 - Mr. Sefcik commented that this item seeks to set a moisture allowance (loss or gain) and to his knowledge no work has been done or data provided to determine support the proposed plus or minus allowance. It appears to be arbitrary. Mr. Sikula concurs with Mr. Sefcik and questioned if water activity and moisture content are the same thing? Dr. Curran commented that water activity is free water available in the product. Moisture content measures the content of water in the product. Ms. Ayer asked if it is necessary for the lower-case cannabis to be used in parenthesis. Dr. Curran suggested it was a way to clarify terms. Mr. Rutherford commented that the TG believes the item is developed "enough" to be granted Voting status to have something in place to combat consumer fraud. Ms. Warfield recommended removal of the allowance in Table 2.3 and that it be placed in its own table and who would be responsible for training. The Committee recommends that NET 22.1 only be given Assigned. The Committee recommends that the TG review the OWM analysis for this item and address the need for technical studies (data) for moisture loss and gain.

At the 2022 NEWMA Annual Meeting, Mr. McGuire noted that the NCWM Cannabis TG, NCWM L&R Committee, and the NEWMA L&R Committee recommends removing this block and making them individual items to ensure each item is fully considered. Considering these comments, each item in the block was opened individually for comments.

PAL 22.1. Section 2. Definitions 2.XX *Cannabis* and *Cannabis*-Containing Products. - Mr. Jim Willis (New York) stated he believes this item is fully developed and many members have seen these items. These are generally accepted numbers for THC. No additional comments received during the open hearing. NEWMA L&R Committee recommends this item continues to be a Voting Item.

PAL 22.2. Section 10. Requirements Section 10. Requirements, 10.XX Cannabis and Cannabis Containing Products - No additional comments received during the open hearing. NEWMA L&R Committee recommends this item continues to be a Voting Item.

MOS 22.2. Section 1.XX. *Cannabis* and *Cannabis*-Containing Products and 2.XX. *Cannabis* and *Cannabis*-Containing Products - Mr. Jason Flynn (New Jersey) noted that on page 129 of the NEWMA

L&R Committee submission, Section 1.XX.X. Water Activity, line 16, language describes the latest version of water activity. In reference to ASTM D8197, questions whether we should reference the ASTM standard or include the verbiage since ASTM standards are regularly updated. NEWMA L&R Committee believes to be consistent with the rest of the NIST Handbook 130, referencing the ASTM standard is the appropriate. No additional comments received during the open hearing. NEWMA L&R Committee recommends this item continues to be a Voting Item.

NET 22.1. HB133, Section 1.2.6. Deviations Caused by Moisture Loss or Gain and Section 2.3.8. Table 2-3 - Mr. Cassidy noted TG continues to work on dealing with moisture content and moisture in the case of cannabis is the opposite of what weight and measures is familiar with (moisture loss vs. moisture content). He related an analogy as to how a humidor operates to protect cigars, so cannabis needs to have a certain moisture content to be a viable product and needs to be tested that way. Mr. Cassidy questioned NIST's role in publishing these items. Mrs. Butcher responded, "once the NCWM votes and passes specific language, it is NIST's intent to publish the content, subject to legal review, reflecting that NIST does not have a policy role as to marijuana's status as a Schedule 1 controlled substance." NEWMA L&R Committee recommends this item continues to be an Assigned Item.

At the 2022 NEWMA Interim Meeting, Chair Sakin commented on the history of these items and believes they are fully developed and ready for Voting status. Charlie Rutherford (ASTM) expressed his appreciation for support of these items and cautioned against delaying passage of these items because they also refer to hemp. He further commented that several states continue to move forward adopting medicinal and recreational uses of cannabis. Mr. Sakin (Holliston, Massachusetts) commented that he has several growers in his area and believes these items needs to move forward as Voting Items. Ms. Lisa Warfield (NIST OWM) provided separate comments on each of the items in the block as follows:

B3: PAL-22.1. – Section 2. Definitions, 2.XX. Cannabis and Cannabis-Containing Products - Section 2 Definitions defines terms as they are used in the UPLR; these are not intended to define commodities in the marketplace (ex. of definitions: package, nonconsumer, consumer, person, principal display). The UPLR does not define products or commodities. This item could set a precedent for defining commodities. "Cannabis" has a known standard of identity; it is not necessary to add a definition to the handbook.

B3: PAL-22.2. – Section 10. Requirements, 10.XX. Cannabis and Cannabis-Containing Products - The FDA has already established criteria for packaged products states product identity locations on package (PDP), net contents, and declaration of responsibility. Determining font style for packaged products would set an unintended precedent for NCWM. OWM has previously noted concerns with "Cannabis" being italicized. It is written in the cannabis regulation in Italics format. As this item is written, it reflects a requirement that the term "Cannabis" appear in italics style on the principal display panel. If adopted, OWM recommends the Committee add the statement to (a)(2); "the term Cannabis shall appear in capitalization and italics style on the principal display panel." If it is not a requirement the capitalization and italics format must be removed to avoid confusion in labeling requirements.

If this change is adopted manufacturers will need time to change their labeling and use up their current labels. She concluded with a reminder that this item pertains to more than cannabis sales and includes such products as clothing, lip balms, and lotions to name a few.

B3: MOS-22.2 Section 1.XX Cannabis and Cannabis-Containing Products and 2.XX Cannabis and Cannabis-Containing Products - OWM does not concur that a method of sale is necessary for this commodity. The Weights and Measures Law, Section 16. Method of Sale already exists and states that commodities in liquid form shall be sold by liquid measure or by weight, and that commodities not in liquid form shall be sold by weight, by measure or by count. It further states that the method of sale shall provide accurate and adequate quantity information that permits the buyer to make price and quantity comparisons.

Mr. Rutherford commented that the most significant issue discussed by Ms. Warfield is waiting to implement labeling requirements. He said there are no pre-printed labels in this marketplace. Mr. Sakin asked if states call products by varied terms. Mr. Rutherford replied that there is no standard terminology, and he believes that the L&R Committee should decide whether the word cannabis should or should not be italicized. Mr. Walt Remmert (Pennsylvania) supported this with Voting status taking into consideration NIST comments. Mr. Jason Flint (New Jersey) and Mr. Cassidy concur. The Committee recommends Voting status for this item.

Item Block 6 (B6) Transmission Fluid

B6: MOS-21.1. A Section 2.36.2. Labeling and Identification of Transmission Fluid
B6: FLR-21.2. A Section 3.14.1. Labeling and Identification of Transmission Fluid

Source: Missouri Department of Agriculture

Submitter's Purpose and Justification:

Protect consumers by providing a cautionary statement of package labels of obsolete transmission fluids. Cautionary statements regarding obsolete products are currently required for tractor hydraulic fluids and are under consideration for motor oil. A cautionary statement and its position on the product label are currently not required for Transmission fluid in either the Method of Sale, or Fuels and Lubricants Regulations. This proposal will protect consumers by ensuring they are informed when purchasing transmission fluids.

The submitter acknowledged that there may be argument that there is not sufficient space on the front package label for a cautionary statement.

The submitter requested Voting status for this item in 2021.

OWM Executive Summary for Section Item Block 6 (B6) – Transmission Fluid
NOTE: The original submitter of this Item was Missouri Department of Agriculture. The source should read the Fuels and Lubricants Subcommittee. OWM supports the continued work of Transmission Fluid Focus Group. **OWM Recommendation:** OWM recommends this as Assigned Item.

Table 3. Summary of Recommendations

Item Block 6 (B6) – Transmission Fluid

	V	D	W	A	I	Note*	Comments
Submitter							
OWM				✓			
CWMA				✓			
WWMA				✓			
SWMA				✓			
NEWMA							

Table 3. Summary of Recommendations							
Item Block 6 (B6) – Transmission Fluid							
	V	D	W	A	I	Note*	Comments
NCWM							

*Notes Key:
1 – Submitted modified language
2 – Item not discussed
3 – No meeting held
4 – Not submitted on agenda
5 – No recommendation or not considered

Item Under Consideration:

B6: MOS-21.1. A Section 2.36.2. Labeling and Identification of Transmission Fluid

2.36.2. Labeling and Identification of Transmission Fluid. – Transmission fluid shall be labeled or identified as described below.

(Added 2017)

2.36.2.1. Container Labeling. – The label on a container of transmission fluid shall not contain any information that is false or misleading. Containers include bottles, cans, multi-quart or liter containers, pails, kegs, drums, and intermediate bulk containers (IBCs). In addition, each container of transmission fluid shall be labeled with the following:

(a) the brand name;

(b) the name and place of business of the manufacturer, packer, seller, or distributor;

(c) the words "Transmission Fluid," which may be incorporated into a more specific description of transmission type such as "Automatic Transmission Fluid" or "Continuously Variable Transmission Fluid";

(d) the primary performance claim or claims met by the fluid and reference to where any supplemental claims may be viewed (for example, website reference). Performance claims include but are not limited to those set by original equipment manufacturers and standards setting organizations such as SAE and JASO and are acknowledged by reference; and

(e) an accurate statement of the quantity of the contents in terms of liquid measure.

(f) **Any obsolete equipment manufacturer specifications shall be clearly identified as "obsolete" and accompanied by the following cautionary statement on the principal display in accordance with the Uniform Packaging and Labeling Regulation, Section 8. Prominence and Placement: Consumer Packages and Section 9. Prominence and Placement: Non-Consumer Packages.**

Caution: Some of the specifications are no longer deemed active by the original equipment manufacturer. Significant harm to the transmission is possible when using

in applications in which it is not intended. Always refer to your vehicle owner's manual for proper transmission fluids.

The above ~~warning~~ cautionary statement is not required if the fluid claims to meet current original equipment manufacturer's specifications and refers to thereby preceding specifications.

(Added 20XX)

(Added 2017 **and Amended 20XX**)

B6: FLR-21.2. A Section 3.14.1. Labeling and Identification of Transmission Fluid

Amend Handbook 130, Uniform Fuels and Automotive Lubricants Regulation, as follows:

3.14.1. Labeling and Identification of Transmission Fluid. – Transmission fluid shall be labeled or identified as described below

(Added 2017)

3.14.1.1. Container Labeling. – The label on a container of transmission fluid shall not contain any information that is false or misleading. Containers include bottles, cans, multi-quart or liter containers, pails, kegs, drums, and intermediate bulk containers (IBCs). In addition, each container of transmission fluid shall be labeled with the following:

(a) the brand name;

(b) the name and place of business of the manufacturer, packer, seller, or distributor;

(c) the words "Transmission Fluid," which may be incorporated into a more specific description of transmission type such as "Automatic Transmission Fluid" or "Continuously Variable Transmission Fluid";

(d) the primary performance claim or claims met by the fluid and reference to where any supplemental claims may be viewed (e.g., website reference). Performance claims include but are not limited to those set by original equipment manufacturers and standards setting organizations such as SAE and JASO and are acknowledged by reference; and

(e) an accurate statement of the quantity of the contents in terms of liquid measure.

(f) **Any obsolete equipment manufacturer specifications shall be clearly identified as "obsolete" and accompanied by the following cautionary statement on the principal display panel in accordance with the Uniform Packaging and Labeling Regulation, Section 8. Prominence and Placement: Consumer Packages and Section 9. Prominence and Placement: Non-Consumer Packages.**

Caution: Some of the specifications are no longer deemed active by the original equipment manufacturer. Significant harm to the transmission is possible when using in applications in which it is not intended. Always refer to your vehicle owner's manual for proper transmission fluids.

The above cautionary statement is not required if the fluid claims to meet current original equipment manufacturer's specifications and refers to thereby preceding specifications

(Added 20XX)

(Amended 2017 **and 20XX**)

NIST OWM Detailed Technical Analysis:

NIST supports the work of the Focus Group and encourages them to work with industry to reach for recommended language for inclusion into the NIST Handbook.

Summary of Discussions and Actions:

At the 2021 NCWM Interim Meeting, Mr. Ron Hayes (retired) provided an overview to the Committee regarding the issue with obsolete fluids in the marketplace. He also remarked that at the CWMA 2020 Meeting he with worked with Ms. Warfield (NIST OWM) to clarify the language in the first paragraph of (f). Ms. Warfield (NIST OWM) remarked that the language should be clear and conspicuous following the UPLR. Ms. Warfield had noted that UPLR does not have specifications for color however, Section 8. does state it must be conspicuous. It was unknown whether this product type include both consumer and non-consumer type packaging. Ms. Johanna Johnson would like additional time to reach consensus with industry regarding to align terminology (e.g., obsolete, current, active). Ms. Johnson requested the Committee provide this with an Informational status.

The Committee reviewed the following item for consideration in NCWM Publication 15 (2021):

(e) Any obsolete equipment manufacturer specifications shall be clearly identified as "obsolete" and accompanied by the following warning on the principal display panel in clearly legible font size and color as stated in Uniform Packaging and Labeling Regulation 8.2.2.

Caution: Some of the specifications are no longer deemed active by the original equipment manufacturer. Significant harm to the Transmission is possible when using in applications in which it is not intended. Always refer to your vehicle owner's manual for proper transmission fluids.

The above warning is not required if the fluid claims to meet current original equipment manufacturer's specifications and refers to thereby preceding specifications.

(Added 20XX)

It was agreed by the Committee that this language should be identical to the language that was just voted in at the 2020 NCWM Annual Meeting within Item Block 2. Tractor Hydraulic Fluid.

The Committee provided this a status of Assigned and would like FALS to further evaluate with recommendations that Ms. Johnson provides. The Committee would like FALS to review the language to see if this product includes consumer and non-consumer type packaging. Many spoke in support of how this item will be developed through FALS.

At the 2021 NCWM Annual Meeting, FALS Chair Striejewske provided an updated that Ms. Johnson provided an update of the FG work to date. The FG has concluded that the model regulation in the handbook

is sufficient, but there is no licensing system for transmission fluid as there is for engine oil. Transmission fluids have been found in the marketplace in Missouri that are not suitable for use in some transmissions. The group is working to harmonize the various standards across the industry. Several OEM specifications have been found and are being categorized. This work is ongoing, and no further action was taken by the Committee.

At the 2022 NCWM Annual Meeting the Committee supports this as an Assigned Item to FALS where there is the expertise to develop this item.

Regional Association Reporting:

Western Weights and Measures Association

At the 2021 WWMA Annual Meeting, Mr. Russ Lewis (API) provided testimony in support of this Block moving forward as a Voting Item. Dr. Striejewske (FALS Chair) stated that this Item Block has been assigned to FALS, and that the item is being worked on by a Task Group led by Joanna Johnson from the AOCA. Mr. Ron Hayes (Retired, Missouri) stated as part of the Task Group they are working on a list with Allan Morrison (CDFA – DMS). Remarked that the list is comprised of both current and obsolete automatic transmission fluids. The Committee recommends that this item remain Assigned. The Committee supports the work that the FALS Subcommittee is conducting.

At the 2022 WWMA Annual Meeting, The L&R Committee did not solicit comments on this item, and recommends this item continue as assigned to FALS and thanks the subcommittee for their support.

Central Weights and Measures Association

At the 2021 CWMA Interim Meeting, Mr. Hayes commented that there have been several meetings related to this issue, and he and Mr. Morrison are working on a list of specifications for all existing transmission fluids for engines. He believes the item is fully developed and is ready for Voting status pending the completion of the list of specifications for transmission fluids for engines. Ms. Joanna Johnson (Automotive Oil Change Association and Chair of the FALS Transmission Fluid FG) made several comments. The FG does not recommend the current language because there is no clear distinction or understanding of the definition of obsolete. The FG is supportive of developing the complete list of specifications to see if there is a way to distinguish ones that are not fit for purpose or should be considered obsolete, and the engine manufacturers will comply with. Based on comments provided during open hearings, the Committee recommends the item remain Assigned to the Focus Group.

At the 2022 CWMA Annual Meeting, there were no comments heard on this item. The Committee recommends keeping this Assigned.

At the 2022 CWMA Interim Meeting, Mr. Kevin Upschulte (Missouri) commented that the original intent of this item was to define products in the marketplace that were obsolete. The focus of the ATF group has shifted to develop language for obsolete lubricants that will appear on ATF containers. Mr. Upschulte believes Assigned status is appropriate for further development. The Committee concurs.

Southern Weights and Measures Association

At the 2021 SWMA Annual Meeting, Mr. Prentiss Searles (API) is in support of this item remaining as Assigned. NIST OWM provided written analysis supporting the development of this Blocked item through FALS. The Committee recommends this item to remain Assigned.

At the 2022 SWMA Annual Meeting, no comments were heard on this item. The Committee recommends this item remain in the Assigned Status.

Northeastern Weights and Measures Association

At the 2021 NEWMA Interim Meeting, Mr. Hayes provided an update on this item. Ms. Joanna Johnson (TG Chair) submitted a statement that Mr. Hayes read. Ms. Warfield commented that she recommended the item move forward with Voting status provided the list of obsolete transmission fluids is completed by April 2022 (deadline for NCWM Publication 16). Mr. McGuire supports NIST's recommendation as a Voting Item, as does the Committee.

At the 2022 NEWMA Annual Meeting, no comments received during the open hearing.

References:

[1] NIST OWM Analysis and Executive Summary reports **https://www.nist.gov/pml/weights-and-measures/publications/owm-technical-analysis**
[2] National Conference on Weights and Measures Publication 15 (2023) and 16 (2022) **https://www.ncwm.com/**
[3] 1905-2021 NCWM Annual Conference reports **https://www.nist.gov/pml/weights-and-measures/publications/ncwm-annual-reports**