

3 **Bloodborne Pathogens**

4
5 NIST S 7101.51

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10 **1. PURPOSE**

11 The purpose of the Bloodborne Pathogens (BBP) suborder is to eliminate or minimize
12 occupational exposure to bloodborne pathogens and other potentially infectious materials
13 (OPIMs) in accordance with the Occupational Health and Safety Administration (OSHA)
14 Standard for Bloodborne Pathogens, [29 CFR 1910.1030](#).
15

16 This suborder, together with the associated deployment tools, the schedule and method of
17 implementation, the applicable OU job hazard classification and analysis procedures, and the
18 associated hazard reviews for specific experiments, shall serve as the Bloodborne Pathogens
19 Exposure Control Plan (ECP) for all NIST facilities.
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21

22 **2. BACKGROUND**

23 None.
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26 **3. APPLICABILITY**

27 a. The provisions of this suborder apply to all NIST facilities and to all NIST employees who in
28 carrying out their assigned duties could be exposed to bloodborne pathogens, with the
29 following exceptions:
30

31 (1) Those noted in NIST O 710, Occupational Safety and Health; and
32

33 (2) Workers at the NIST Child Care Center.
34

35 b. NIST employees who work with biohazardous materials such as bacteria, fungi, viruses,
36 parasites, rickettsia, biological toxins, recombinant DNA (deoxyribonucleic acid) materials,
37 prions, and non-human mammalian blood, blood products, body fluids, cell lines, and tissues
38 shall follow the requirements in the NIST Biosafety suborder.

39 **4. REFERENCES**

- 40 a. 29 CFR 1910.1030, [Bloodborne Pathogens](#)
41
42 b. Needle Stick Safety and Prevention Act, Amendment to 29 CFR 1910.1030
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45 **5. APPLICABLE NIST DIRECTIVES**

- 46 a. NIST 7101.50: [Biosafety](#)
47
48 b. NIST 7101.20: [Work and Worker Authorization Based on Hazard Reviews](#)
49
50 c. NIST 7101.22: *Hazard Signage*
51
52 d. NIST 7101.24: [Incident Reporting and Investigation](#)
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54 e. NIST 7101.21: [Personal Protective Equipment](#)
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56
57 **6. REQUIREMENTS**

- 58 a. Exposure Determinations
59

60 (1) Exposure determinations shall be conducted as part of the hazard review process to
61 identify employees' potential risk of occupational exposure to human blood or OPIMs as
62 defined by the OSHA Bloodborne Pathogens Standard. The exposure determination is
63 made without regard to the use of personal protective equipment (PPE).
64

65 (2) Employees identified as having a potential occupational exposure to human blood and
66 OPIMs must comply with the BBP Exposure Control Plan (ECP).
67

- 68 b. Compliance Methods

69 All of the following compliance methods shall be adhered to:
70

- 71 (1) Universal Precautions

72 According to OSHA, Universal Precautions are defined as the infection control practices
73 in which all human blood and OPIMs are treated as if known to be infectious for HBV,
74 HIV, and other bloodborne pathogens. The Universal Precaution approach is based on
75 the premise that a medical history and examination cannot reliably identify all people
76 infected with bloodborne pathogens. OSHA mandates that Universal Precautions shall be
77 observed to prevent contact with blood or other potentially infectious materials. Under

78 circumstances in which differentiation between body fluid types is difficult or impossible,
79 all body fluids shall be considered potentially infectious materials.

80
81 (2) Engineering Controls and Work Practice Controls

82 Engineering controls and work practice controls shall be used to eliminate or minimize
83 employee exposure. Where occupational exposure remains after instituting these
84 controls, personal protective equipment shall also be used. Engineering controls shall be
85 examined and maintained or replaced on a regular schedule to ensure their effectiveness.

86
87 i. Hand-washing

88
89 (i) Hand-washing facilities in the same room shall be readily accessible to
90 employees.

91
92 (ii) When provision of hand-washing facilities in the same room is not
93 feasible, the employer shall provide in the room an appropriate antiseptic
94 hand cleanser in conjunction with clean cloth/paper towels or antiseptic
95 towelettes. When antiseptic hand cleansers or towelettes are used, hands
96 shall be washed with soap and running water as soon as feasible.

97
98 (iii) Hands and skin surfaces must be washed immediately following contact
99 with human blood or OPIMs, at the conclusion of tasks that involve
100 blood and OPIMs, and after gloves are removed.

101
102 ii. Sharps control

103
104 (i) Contaminated needles and other sharps shall not be bent, recapped, or
105 removed. The exception to this is if it can be demonstrated that no
106 alternative is feasible or the action is required by a specific medical
107 procedure. If such action is required, then it must be accomplished
108 through the use of a mechanical device or a one-handed technique.
109 Shearing or breaking of contaminated needles is prohibited.

110
111 (ii) Contaminated sharps shall be discarded immediately, or as soon as
112 feasible, in containers that are closable, puncture resistant, leak-proof on
113 sides and bottom, and biohazard labeled or color-coded.

114
115 (iii) Containers for contaminated sharps shall be kept in the same room and
116 be easily accessible to personnel and replaced before they become three-
117 quarters full. Once sharps containers containing contaminated waste

118 have been closed, they should be placed in a medical waste box for
119 disposal. In Gaithersburg and Boulder, OSHE will pick-up and dispose
120 of medical waste boxes upon request.

121
122 (iv) When moved from the area of use, containers of sharps shall be closed
123 immediately prior to removal to prevent spillage or protrusion of
124 contents during handling, storage, transport, or shipping.

125
126 (v) Primary containers of contaminated sharps shall be placed in a
127 secondary container if leakage of the primary container is possible. The
128 secondary container shall be closable; constructed to contain all contents
129 and prevent leakage during handling, storage, transport, or shipping; and
130 labeled or color-coded.

131
132 (vi) When the elimination of needle-bearing devices is not possible, needle
133 devices with safety features should be utilized.

134
135 (vii) Reusable sharps and reusable sharps containers are not permitted at
136 NIST.

137
138 iii. Containment Equipment

139
140 (i) Engineering controls such as biosafety cabinets, fume hoods, sealed
141 centrifuge rotors, sealed centrifuge safety cups, or bench top splash
142 shields shall be used for blood and OPIMs procedures that could
143 potentially generate splashes and droplets. Such procedures include
144 centrifuging, grinding, vortexing, blending, transferring liquids,
145 homogenizing, withdrawing liquids under pressure, and opening
146 containers of infectious materials having internal pressures different
147 from ambient pressure.

148
149 iv. Standard Safe Work Practices

150
151 (i) Eating, drinking, smoking, applying cosmetics or lip balm, and handling
152 contact lenses are prohibited in work area.

153
154 (ii) Food and drink shall not be kept in refrigerators, freezers, shelves,
155 cabinets, or on countertops or bench tops where blood or OPIMs are
156 present.

157

- 158 (iii) All procedures involving blood or OPIMs shall be performed in a
159 manner that minimizes splashing, spraying, splattering, and generating
160 droplets of these substances.
- 161
- 162 (iv) Mouth pipetting/suctioning of blood or OPIMs is prohibited. Use
163 mechanical pipetting devices.
- 164
- 165 (v) Equipment that may become contaminated with blood or OPIMs shall be
166 examined prior to servicing or shipping and shall be decontaminated as
167 necessary unless the decontamination of the equipment is not feasible.
168 A readily observable biohazard label shall be attached to the equipment
169 stating which portions remain contaminated. The information must be
170 conveyed to all affected employees, the servicing representative, and/or
171 the manufacturer, prior to handling, servicing, or shipping so that the
172 appropriate precautions will be taken.
- 173
- 174 (vi) If eyes are exposed to potentially infectious materials, they should be
175 immediately flushed with water for at least 15 minutes, after which a
176 medical evaluation must be obtained. A medical evaluation must be
177 obtained immediately when other percutaneous or mucous membrane
178 exposures occur.
- 179
- 180 (vii) Specimens of blood or OPIMs shall be placed in containers that prevent
181 leakage during collection, handling, processing, storage, transport, or
182 shipping. The container for storage, transport, or shipping shall be
183 biohazard labeled.
- 184
- 185 (viii) If outside contamination of a primary container occurs, the primary
186 container shall be placed within a second container that prevents leakage
187 during the handling, processing, storage, transport, or shipping. The
188 outside of the secondary container shall be biohazard labeled.
- 189
- 190 (ix) If the specimens could puncture the primary container, the primary
191 container shall be placed within a puncture-resistant secondary
192 container.
- 193

194 (3) Personal Protective Equipment

- 195
- 196 (a) Appropriate PPE shall be provided at no cost to employees. Appropriate PPE
197 includes, but is not limited to gloves, gowns, laboratory coats, face shields or masks

- 198 and eye protection, shoe-covers, mouthpieces, resuscitation bags, pocket masks, or
199 other ventilation devices.
- 200
- 201 (b) PPE must be chosen according to the NIST Personal Protective Equipment Suborder,
202 and each OU's Hazard Review procedure.
- 203
- 204 (c) PPE is chosen based on the anticipated exposure to blood or OPIMs. PPE is
205 considered appropriate only if it does not permit blood or OPIMs to pass through or
206 reach the employee's clothing, skin, eyes, mouth, or other mucous membranes under
207 normal conditions of use and for the duration of the time the protective equipment is
208 used.
- 209
- 210 (d) Appropriate protective clothing such as, but not limited to, gowns, aprons, lab coats,
211 clinic jackets, or similar outer garments shall be worn in occupational exposure
212 situations. The type and characteristics will depend upon the task and degree of
213 exposure anticipated.
- 214
- 215 (e) Appropriate PPE in the appropriate sizes must be readily accessible.
- 216
- 217 (f) All PPE shall be cleaned, laundered, or disposed of at no cost to the employee.
218 Contaminated PPE shall never be taken home for laundering.
- 219
- 220 (g) PPE shall be repaired or replaced as needed to maintain its effectiveness at no cost to
221 employees.
- 222
- 223 (h) The following PPE practices shall be adhered to:
- 224
- 225 i. If a garment(s) is penetrated by blood or OPIMs, the garment(s) shall be
226 removed immediately or as soon as feasible.
- 227
- 228 ii. All PPE shall be removed prior to leaving the work area.
- 229
- 230 iii. When PPE is removed, it shall be placed in an appropriately designated area
231 or container for storage, washing, decontamination, or disposal.
- 232
- 233 iv. Gloves shall be worn when it can be reasonably anticipated that the
234 employee may have hand contact with blood, OPIMs, mucous membrane,
235 and non-intact skin; when performing vascular access procedures; and when
236 handling or touching contaminated items or surfaces.
- 237

- 238 v. Hypoallergenic gloves, glove liners, powderless gloves, or other similar
239 alternatives shall be readily accessible to those employees who are allergic
240 to the gloves normally provided.
241
- 242 vi. Disposable gloves shall be replaced as soon as feasible when contaminated,
243 torn, or punctured. Disposable gloves shall not be washed or
244 decontaminated for re-use.
245
- 246 vii. Utility gloves may be decontaminated for re-use if the integrity of the glove
247 is not compromised. However, they must be discarded if they are cracked,
248 peeling, torn, or punctured.
249
- 250 viii. Masks in combination with eye protection devices, such as goggles or
251 glasses with solid side shields, or stand-alone chin-length face shields shall
252 be worn whenever splashes spray, splatter, or droplets of blood or OPIMs
253 may be generated and eye, nose, or mouth contamination can be reasonably
254 anticipated.
255

256 (4) Housekeeping

- 257
- 258 (a) The worksite shall be maintained in a clean and sanitary condition by adhering to the
259 following:

- 260
- 261 i. All work surfaces and equipment are to be decontaminated after completion of
262 procedures, immediately or as soon as feasible when surfaces have been
263 overtly contaminated or after any spill of blood or OPIMs, and at the end of
264 the work shift if the surface has been contaminated since the last cleaning.
265
- 266 ii. Protective coverings, such as plastic wrap, aluminum foil, or imperviously-
267 backed absorbent paper used to cover equipment and environmental surfaces
268 are to be removed and replaced as soon as feasible when they become overtly
269 contaminated or at the end of the work shift if they may have become
270 contaminated during the shift.
271
- 272 iii. All bins, pails, cans, and similar receptacles intended for reuse which have a
273 reasonable likelihood for becoming contaminated with blood or other
274 potentially infectious materials shall be inspected and decontaminated on a
275 regularly scheduled basis and cleaned and decontaminated immediately or as
276 soon as feasible upon visible contamination.
277

- 278 iv. Any broken glassware which may be contaminated is not to be picked up
279 directly with the hands. It shall be cleaned up using mechanical means, such
280 as a brush and dust pan, tongs, or forceps.
281
- 282 v. Appropriate disinfectants shall be used for routine decontamination of work surfaces and
283 equipment and spill clean-ups. Freshly prepared 10% bleach solution is the disinfectant
284 of choice for blood and OPIMs. Other EPA approved tuberculocidal disinfectants are the
285 only acceptable disinfectants; a list of such disinfectants can be accessed at
286 http://www.epa.gov/oppad001/list_b_tuberculocide.pdf . Disinfectants must be in
287 contact with work surfaces, equipment (where appropriate, refer to equipment manual for
288 decontamination instruction), or spills for at least 20 minutes before cleaning. Cleanups
289 in the laboratories shall be conducted by Laboratory staff members that have been trained
290 on biological spill cleanups. Contact OSHE for assistance if needed.
291
- 292 vi. For Boulder personnel, pools of blood or body fluids resulting from injuries
293 shall be cleaned up by the Boulder Safety Office.
294

295 (5) Regulated Waste Disposal
296

- 297 (a) All contaminated sharps shall be discarded as described in 8.b(2)(b).
298
- 299 (b) All other regulated waste such as pipettes, centrifuge tubes, cell cultures, and human
300 specimens should be placed in labeled or color-coded biohazard waste containers that
301 are closable and constructed to contain all contents and to prevent leakage of fluids
302 during handling, storage, transport, or shipping.
303
- 304 (c) Biohazard waste receptacles shall remain upright during use and be disposed of
305 routinely when three-quarters full.
306
- 307 (d) If outside contamination of the waste container occurs, it shall be placed in a labeled
308 or color-coded second container that is closable and constructed to contain all
309 contents and to prevent leakage of fluids during handling, storage, transport or
310 shipping.
311
- 312 (e) In Gaithersburg and Boulder, OSHE will pick-up and dispose of medical waste boxes
313 upon request. Waste generators are expected to submit pickup requests, limit the
314 loading of each medical waste box to less than 40 pounds, store sealed medical waste
315 boxes in the work area in which they were generated or in the adjacent service galley,
316 not in common hallways.
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318 (6) Laundry

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- (a) Any garment penetrated by blood or OPIMs shall be removed immediately, or as soon as feasible and handled as little as possible, using gloves and any other appropriate universal precautions. Contaminated laundry shall be bagged or containerized at the location where it was used and placed in an appropriately labeled (biohazard symbol) container or leak proof bag prior to laundering.
- (b) Soiled laundry shall be processed by an outside contractor that specifically cleans lab coats or contaminated laundry. Soiled laundry must be placed in a labeled laundry bag for transport.
- (c) For NIST facilities that do not have contracted laundry services, disposable gowns shall be used. Worn disposable gowns shall be replaced monthly at a minimum or when contaminated. Contaminated gowns shall be discarded in biohazard waste receptacles.

For specific tasks and employee work practices, refer to Appendix B.

c. Hepatitis B Vaccination

- (1) All employees except for Facility Users who have been identified as having potential occupational exposure to blood or OPIMs shall be offered the hepatitis B vaccine by their OUs at no cost. The vaccine is offered after bloodborne pathogen training and within 10 working days of their initial assignment to work unless the employee has previously received the complete hepatitis B vaccination series, antibody testing has revealed that the employee is immune, or the vaccine is contraindicated for medical reasons. Participation in a prescreening program shall not be a prerequisite for receiving hepatitis B vaccination. The vaccine shall be administered by the workplace health unit or, if the workplace does not have a health unit that administers vaccine, a licensed healthcare professional. If an employee chooses to decline vaccination, the employee must sign a declination form. Employees who decline may request and obtain the vaccination at a later date at no cost. Refer to Appendix C for a Hepatitis B vaccine declination form.
- (2) For NIST workplaces that do not offer Hepatitis B vaccines onsite, employees may obtain the vaccination during normal work hours from any licensed healthcare facility or professional. The vaccination cost and travel cost shall be reimbursed by the division according to the OU's reimbursement procedures.

357 (3) If a routine booster dose of the vaccine is recommended by the U.S. Public Health
358 Service (PHS) at a future date, the booster doses are to be made available at no cost to the
359 employees. OSHA shall review the U.S. PHS's recommendations for vaccine boosters
360 during the annual review of this suborder.
361

362 (4) All Hepatitis B vaccine records or declination forms shall be kept by the workplace
363 health unit, or if the workplace does not have a health unit that maintains these records,
364 by the employee's division administrative office.
365

366 d. Post-Exposure Evaluation and Follow-Up
367

368 (1) Employees shall immediately notify their supervisor of an exposure incident and an
369 incident report must be completed and submitted through NIST's Incident Reporting and
370 Investigation System (IRIS) in accordance with the requirements of the NIST Incident
371 Reporting and Investigation Suborder.
372

373 (2) Following an exposure incident report, a no cost confidential medical evaluation and
374 follow-up during normal work hours that includes at least the following elements shall be
375 made available immediately to the exposed employee:
376

377 (a) Documentation of the route(s) of exposure and the circumstances under which the
378 exposure incident occurred;
379

380 (b) Identification and documentation of the source individual, unless the employer can
381 establish that identification is infeasible or prohibited by state or local law;
382

383 (c) Testing of the source individual's blood as soon as feasible and after consent is
384 obtained in order to determine HBV and HIV infectivity;
385

386 i. Results of the source individual's testing shall be made available to the
387 exposed employee. When the source individual is already known to be
388 infected with HBV or HIV, testing for the source individual's known HBV or
389 HIV status need not be repeated.
390

391 (d) Collection of the exposed employee's blood as soon as feasible and testing after
392 consent is obtained; and
393

394 i. The blood sample shall be preserved for up to 90 days to allow the employee
395 to decide if their blood should be tested for HBV and HIV serological status.
396

- 397 (e) Post-exposure prophylaxis, counseling, and evaluation of reported illnesses.
398
- 399 (3) If the exposure results from a contaminated sharps injury, the incident shall be recorded
400 on the sharps injury log (see Appendix F).
401
- 402 (4) The evaluating healthcare professional will be provided with the following information:
403
- 404 (a) A copy of the OSHA Bloodborne Pathogen regulations (29 CFR 1910.1030);
405
- 406 (b) A description of the route of exposure and circumstances under which exposure
407 occurred;
408
- 409 (c) A description of the employee's duties as they relate to the exposure incident;
410
- 411 (d) Results of the source individual's blood testing, if available; and
412
- 413 (e) Any medical records which are relevant to the appropriate treatment of the employee,
414 including vaccination status, and which are the employer's responsibility to maintain.
415
- 416 (5) A copy of the evaluating healthcare professional's written opinion shall be obtained by
417 the OU and provided to the exposed employee within 15 days after evaluation. The
418 healthcare professional's written opinion for Hepatitis B vaccination shall be limited to
419 whether Hepatitis B vaccination is indicated for an employee, and if the employee has
420 received such vaccination. The opinion shall state that the employee has been informed
421 of the results of the evaluation and that the employee has been told about any medical
422 conditions resulting from exposure to blood or OPIMs that require further evaluation or
423 treatment. Refer to Appendix D for the Healthcare Professional's Opinion Form for
424 Bloodborne Pathogens Post-Exposure Evaluation and Follow-up.
425
- 426 (6) All other unrelated findings or diagnoses shall remain confidential and shall not be in the
427 written report.
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437 e. Communication of Hazards to Employees

438

439 (1) Labels and Signs

440

441 (a) Labels

442

443 i. Biohazard warning labels shall be affixed to containers of regulated waste;
444 refrigerators and freezers containing blood or OPIMs; and other containers
445 used to store, transport, or ship blood or other OPIMs.

446

447 ii. Labels shall include the biohazard symbol and the word “Biohazard.” These
448 labels shall be fluorescent orange or orange-red, or predominantly so, with
449 lettering and biohazard symbol in a contrasting color as in Figure 1. Red bags
450 or red containers may be substituted for labels.

451



452

453

454 Figure 1. Biohazard label

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456 iii. Labels shall either be an integral part of the container or shall be affixed as
457 close as possible to the container by string, wire, adhesive, or other method
458 that prevents their loss or unintentional removal.

459

460 iv. Individual containers of blood or OPIMs that are placed in a labeled container
461 during storage, transport, shipment or disposal are exempted from the labeling
462 requirement.

463

464 v. Regulated waste that has been decontaminated need not be labeled or color
465 coded.

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469

470 (b) Signs

- 471
- 472 i. Biohazard signs shall be posted at the entrance to work areas where blood and
- 473 OPIMs are handled. The signs shall be in compliance with the NIST Hazard
- 474 Signage Suborder. See Figure 2 below. Employees can request biohazard
- 475 signs in accordance to the NIST Hazard Signage Suborder.



487 Figure 2. Biohazard signage

488

489 (2) Training

- 490
- 491 (a) Training shall be provided in accordance with the requirements of the NIST Safety
- 492 Education and Training Suborder.
- 493
- 494 (b) Bloodborne-pathogens training shall include the content described in Appendix E.
- 495
- 496 (c) Initial bloodborne-pathogens training provided by an OSHE instructor shall be
- 497 completed by new employees, including newly reassigned employees, prior to their
- 498 working with materials that could result in their exposure to bloodborne pathogens or
- 499 OPIMs. Current employees who have completed the bloodborne-pathogens training
- 500 module in the Commerce Learning Center are exempt from having to meet this
- 501 requirement.
- 502
- 503 i. Completion of State- or County-provided bloodborne-pathogens training will
- 504 meet this requirement.
- 505
- 506 (d) Refresher bloodborne-pathogens training specified by OSHE online shall be
- 507 completed online by employees annually.
- 508
- 509

510 f. Documentation/Recordkeeping

511

512 (1) Training Records:

513

514 (a) All initial and refresher bloodborne-pathogen training shall be documented, recorded,
515 and maintained for at least three years by OSHE in accordance with the requirements
516 of the NIST Safety Education and Training Suborder. Documentation and records
517 shall include the following:

518

519 i. The dates of the training sessions;

520

521 ii. The contents or a summary of the training sessions;

522

523 iii. The names and qualifications of persons conducting the training; and

524

525 iv. The names and job titles of all persons attending the training sessions.

526

527 (b) Employee training records shall be provided upon request for examination and copying
528 to employees, and to employee representatives.

529

530 (2) Medical Records

531

532 (a) Accurate records for each employee with an occupational exposure shall be
533 established and maintained in accordance with 29 CFR 1910.20 by the workplace
534 health unit, or if the workplace does not have a health unit that establishes and
535 maintains such records, by the covered employee's division administrative office.
536 This record shall include:

537

538 i. The name and social security number of the employee;

539

540 ii. A copy of the employee's hepatitis B vaccination status including the dates of
541 all the hepatitis B vaccinations and any medical records relative to the
542 employee's ability to receive vaccination;

543

544 iii. A copy of all results of examinations, medical testing, and follow-up
545 procedures;

546

547 iv. A copy of the healthcare professional's written opinion; and

548

549 v. A copy of the information provided to the healthcare professional.

550 (b) The medical records shall be kept confidential and maintained for at least the duration
551 of employment plus 30 years with the exceptions of health insurance claims records;
552 first aid records of one-time treatment and subsequent observation of minor scratches,
553 cuts, burns, splinters, and the like which do not involve medical treatment; and
554 medical records of employees who have worked for less than one year if the records
555 are provided to the employee upon termination.

556
557 (c) The medical records shall not be disclosed or reported to any person within or outside
558 the workplace without the covered employee's express written consent except as
559 required by this section or as may be required by law.

560
561 (d) Employee medical records shall be provided upon request for examination and copying
562 to employees and to employee representatives.

563
564 (3) Transfer of Training and Medical Records

565
566 (a) The requirements involving transfer of records set forth in 29 CFR 1910.1020(h) shall
567 be met by the transferring party.

568
569 (4) Sharps Injury Log

570
571 (a) A sharps injury log shall be maintained by the division for the recording of
572 percutaneous injuries from contaminated sharps. Refer to Appendix F for an example
573 of a Sharps Injury Log. Alternative Sharps Injury Logs are acceptable.

574
575 (b) The information in the sharps injury log shall be recorded and maintained in a manner
576 that protects the confidentiality of the injured employee.

577
578 (c) The log shall be completed by division personnel and maintained by the division for
579 at least six years.

580
581 (d) The sharps injury log shall contain, at a minimum:

- 582
583 i. Type and brand of device involved in the incident;
584
585 ii. Work area where the exposure incident occurred; and
586
587 iii. Explanation of how the incident occurred.
588

589 (e) The Sharps Injury Log shall be reviewed at least once a year by division personnel.
590 Sharps and procedures that are frequently documented in the log shall be replaced by
591 safer alternatives.
592
593

594 7. DEFINITIONS

- 595 a. Blood - Human blood, human blood components, and products made from human blood.
596
597 b. Bloodborne Pathogens - Pathogenic microorganisms that are present in human blood, and
598 can cause disease in humans. These pathogens include, but are not limited to, Human
599 Immunodeficiency Virus (HIV), Hepatitis B Virus (HBV), and Hepatitis C Virus (HCV).
600 Refer to Appendix A for detailed descriptions.
601
602 c. Clinical Laboratory – A workplace where diagnostic or other screening procedures are
603 performed on blood or OPIMs.
604
605 d. Contaminated – The presence or the reasonably anticipated presence of blood or OPIMs on
606 an item or surface.
607
608 e. Contaminated Laundry – Laundry soiled with blood or OPIMs, or that may contain sharps.
609
610 f. Contaminated Sharps – Any contaminated object that can penetrate the skin, including, but
611 not limited to, needles, scalpels, lancets, broken glass, broken capillary tubes, and exposed
612 ends of dental wires.
613
614 g. Continuous/established human cell lines – Immortalized cells that have been transformed by
615 spontaneous mutation or natural or laboratory infection with an immortalization agent, and
616 then propagated or passed many times.
617
618 h. Decontamination – The use of physical or chemical means to remove, inactivate, or destroy
619 bloodborne pathogens on a surface or item to the point where they are no longer capable of
620 transmitting infectious particles and the surface or item is rendered safe for handling, use, or
621 disposal.
622
623 i. Engineering Controls – Controls (e.g., sharps disposal containers, self-sheathing needles,
624 safer medical devices, such as sharps with engineered sharps injury protections, and
625 needleless systems) that isolate or remove the bloodborne pathogens hazard from the
626 workplace.
627

- 628 j. Exposure Incident – A specific eye, mouth, other mucous membrane, non-intact skin, or
629 parenteral contact with blood or OPIMs that result from the performance of a covered
630 employee’s duties.
631
- 632 k. Facility User – Any individual who is permitted to use designated NIST facilities under a
633 NIST Facility Use Agreement. Designated NIST facilities include the NIST Center for
634 Neutron Research and the Center for Nanoscale Science and Technology.
635
- 636 l. Hand Washing Facilities – A facility providing an adequate supply of running potable water,
637 soap, and single use towels or air drying machines.
638
- 639 m. Hepatitis B Virus (HBV) – A virus that may be contracted through exposure to blood and/or
640 body fluids and can result in acute and chronic liver diseases.
641
- 642 n. Hepatitis C Virus (HCV) – A virus that may be contracted through exposure to blood and/or
643 body fluids and can result in chronic liver diseases.
644
- 645 o. Human Immunodeficiency Virus (HIV) – A virus that may be contracted through blood
646 and/or body fluids and can result in Acquired Immune Deficiency Syndrome (AIDS), a
647 condition in which the body is unable to fight infections.
648
- 649 p. Licensed Healthcare Professional – A person whose legally permitted scope of practice
650 allows him or her to independently evaluate an individual and determine appropriate
651 interventions, such as hepatitis B vaccination and post-exposure evaluation and follow-up.
652
- 653 q. Medical or Infectious Waste – Infectious human or animal waste generated or produced as a
654 result of research, a medical diagnosis, treatment, or immunization.
655
- 656 r. Needleless System – A medical device that does not use needles for:
657
- 658 (1) The collection of bodily fluids or withdrawal of body fluids after initial venous or arterial
659 access is established;
660
- 661 (2) The administration of medication or fluids; or
662
- 663 (3) Any other procedure with potential percutaneous exposure to a contaminated sharp.
664
- 665 s. Occupational Exposure – Reasonably anticipated skin, eye, mucous membrane, or parenteral
666 contact with blood or other potentially infectious materials that may result from the
667 performance of a covered employee’s duties.

- 668 t. Other Potentially Infectious Materials (OPIMs) include:
669
670 (1) The following human body fluids: semen, vaginal secretions, cerebrospinal fluid,
671 synovial fluid, pleural fluid, pericardial fluid, peritoneal fluid, amniotic fluid, saliva in
672 dental procedures, any body fluid that is visibly contaminated with blood, and all body
673 fluids in situations where it is difficult or impossible to differentiate between body fluids;
674
675 (2) Any unfixed tissue or organ (other than intact skin) from a human (living or dead);
676
677 (3) HIV, HBV, or HCV containing human cells or tissue cultures, organ cultures, and culture
678 media or other solutions;
679
680 (4) Primary and continuous/established human cell lines; and
681
682 (5) Blood, organs, or other tissues from experimental animals infected with HIV or HBV.
683
684 u. Parenteral – Piercing mucous membranes or the skin barrier through such events as needle
685 sticks, human bites, cuts, and abrasions.
686
687 v. Personal Protective Equipment (PPE) – Specialized clothing or equipment worn by an
688 employee for protection against a hazard. General work clothes (e.g., uniforms, pants, shirts
689 or blouses) not intended to function as protection against a hazard are not considered to be
690 personal protective equipment.
691
692 w. Primary human cell lines – Propagated in vitro from primary explants of human tissue or
693 body fluids that have a finite lifetime in tissue culture for 20 passages to 70 passages.
694
695 x. Regulated Medical Waste – Liquid or semi-liquid blood or other potentially infectious
696 materials; contaminated items that would release blood or other potentially infectious
697 materials in a liquid or semi-liquid state if compressed; items that are caked with dried blood
698 or other potentially infectious materials and are capable of releasing these materials during
699 handling; contaminated sharps; and pathological and microbiological wastes containing
700 blood or other potentially infectious materials.
701
702 y. Sharps – Any object that can reasonably be anticipated to penetrate the skin or any other
703 body part, which includes, but is not limited to, needle devices; scalpels; lancets; a piece of
704 broken glass; a broken capillary tube; an exposed end of a wire; or a knife, drill, or bur.
705
706 z. Sharps with Engineered Sharps Injury Protection – A non-needle sharp or sharp device used
707 for withdrawing body fluids, accessing a vein or artery, or administering medications or other

- 708 fluids, with built-in safety features or mechanisms that effectively reduce the risk of an
709 exposure incident.
- 710
- 711 aa. Source Individual – Any individual, living or dead, whose blood or OPIMs may be a source
712 of occupational exposure to covered employees.
- 713
- 714 bb. Sterilize – The use of a physical or chemical procedure to destroy all microbial life, including
715 highly resistant bacterial endospores.
- 716
- 717 cc. Universal Precautions – An approach to infection control, wherein all human blood and
718 OPIMs are treated as if known to be infectious for HIV, HBV, HCV, and other bloodborne
719 pathogens.
- 720
- 721 dd. Work Practice Controls – Controls that reduce the likelihood of exposure by altering the
722 manner in which a task is performed (e.g., prohibiting recapping of needles by a two-handed
723 technique).
- 724

725

726 **8. ACRONYMS**

- 727 a. BBP – Bloodborne Pathogens
- 728
- 729 b. BSC – Biological Safety Cabinet
- 730
- 731 c. CDC – Centers for Disease Control and Prevention
- 732
- 733 d. CFR – Code of Federal Regulations
- 734
- 735 e. CLC – Commerce Learning Center
- 736
- 737 f. CPR – Cardiopulmonary Resuscitation
- 738
- 739 g. ECP – Exposure Control Plan
- 740
- 741 h. HBV – Hepatitis B Virus
- 742
- 743 i. HCV – Hepatitis C Virus
- 744
- 745 j. HIV – Human Immunodeficiency Virus
- 746
- 747 k. NIH – National Institutes of Health

- 748 1. NIST – National Institute of Standards and Technology
749
750 m. OPIMs – Other Potentially Infectious Materials
751
752 n. OSHA – Occupational Safety and Health Administration
753
754 o. PPE – Personal Protective Equipment
755

756
757 **9. RESPONSIBILITIES**

- 758 a. Employees are responsible for:

759
760 (1) Ensuring the safety of sponsored visitors unfamiliar with the requirements of the
761 Bloodborne Pathogens suborder.
762

- 763 b. OSHE Bloodborne Pathogens Program Manager is responsible for:

764
765 (1) Providing OUs a list of all job classifications in which all employees in those job
766 classifications have occupational exposure; a list of job classifications in which some
767 employees have occupational exposure; and a list of all tasks and procedures or groups of
768 closely related task and procedures in which occupational exposure occurs and that are
769 performed by employees in job classifications listed.
770

771

772 **10. AUTHORITIES**

773 There are no authorities specific to this suborder alone.
774

775

776 **11. DIRECTIVE OWNER**

777 Chief Safety Officer
778

779

780 **12. APPENDICES**

- 781 a. Appendix A. Overview of Major Bloodborne Pathogens
782
783 b. Appendix B. Work Practices for Specific Employees or Tasks
784
785 c. Appendix C. Hepatitis B Vaccine Declination Form
786

- 787 d. Appendix D. Healthcare Professional’s Written Opinion Form for Bloodborne Pathogens
- 788 Post Exposure Evaluation and Follow-up
- 789
- 790 e. Appendix E. Bloodborne Pathogens Training Contents
- 791
- 792 f. Appendix F. Sharps Injury Log
- 793
- 794 g. Appendix G. Revision History
- 795
- 796

Appendix A: Overview of Major Bloodborne Pathogens

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(1) Hepatitis B Virus (HBV)

The Hepatitis B virus can cause inflammation of the liver, lifelong infection, cirrhosis (scarring) of the liver, liver cancer, liver failure, and death. The incubation period can be as long as 160 days, with an average of 120 days. Symptoms and signs include anorexia, malaise, nausea, vomiting, abdominal pain, and jaundice. Carriers are capable of passing the disease to others through blood and body fluids. HBV is commonly transmitted through the use of contaminated needles. Workers exposed to infected blood are the most at risk. Vaccines are available.

(2) Hepatitis C Virus (HCV)

Like HBV, HCV also causes inflammation of the liver and chronic liver disease. HCV is primarily spread through contact with infected blood. The potential for HCV transmission associated with percutaneous injury is low, varying between 3 and 10%. Although the HCV can be detected in blood between one to three weeks after the initial exposure, 80 percent of people with hepatitis C have no symptoms, and thus go undiagnosed. Most patients begin to develop liver cell injury within approximately 50 days, although they will be asymptomatic (symptom-free for the first 6 to 7 weeks after exposure). In about 15 percent of people exposed to the virus, their bodies naturally clear it out of their system within six months. The remaining 85 percent of people with hepatitis C will develop some level of chronic hepatitis C. Over time, this can cause serious liver damage, although the rate of progression can vary significantly from individual to individual. Symptoms may include fatigue, loss of appetite, jaundice, dark colored urine, abdominal pains, aches and pains, joint pain, nausea, and vomiting. Serious complications include liver failure caused by chronic infection. Treatment includes interferon and oral ribavirin, or a combination of the two medications. No vaccines are currently available for HCV.

(3) Human Immunodeficiency Virus (HIV)

HIV is transmitted through sexual contact or exposure to infected blood. Although the virus has been found in many body fluids, it is most commonly transmitted by contact with contaminated blood, semen, and vaginal secretions. Symptoms of infection include lack of energy, fatigue, weight loss, frequent fevers, sweating, nausea, abdominal cramps, and vomiting. More severe symptoms occur with advanced states of infection. There is no vaccine currently available for HIV.

834 **Appendix B: Work Practices for Specific Employees or Tasks**

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(1) Laboratory researchers

All laboratory researchers shall follow OSHA’s universal precautions and use the appropriate PPE for all tasks that involve potential eye, mucous membrane, or skin contact with human blood or OPIMs. Face shields must be worn if splashing/splattering is anticipated.

(2) Infectious Waste Management Personnel

All personnel who package and handle infectious waste containers shall wear safety glasses and gloves during tasks where potential eye and skin contact with infectious materials may occur.

(3) Custodial Services

(a) This suborder does not apply to those custodial services personnel at NIST who are contractors. However, it is required that contractor custodial services personnel observe the signs and instructions posted on the laboratory/office entrance in order to minimize their exposure to human blood or OPIMs. If cleanup of human blood or OPIMs are to be performed by contractor custodial personnel, only those who have been trained on blood and OPIMs cleanups shall perform these duties.

(b) Routine cleanup and disinfection of bathrooms are not considered activities that fall under the requirements of 1910.1030. Custodial personnel who are responsible for housekeeping in bathrooms shall carefully handle razors that may be discarded in the common trash by wearing gloves and handling the razor with tongs or tweezers. If feminine hygiene products have been placed into the bathroom's common waste receptacle, and the receptacle is lined with a plastic bag, the bag may be removed and disposed as normal trash.

(4) Plumbing Activities

Most of the body fluids directed into the sanitary system are not regulated by 1910.1030. However, because several diseases are associated with exposure to sewage, all employees who are involved in plumbing activities shall be provided with the necessary equipment to prevent contact with sanitary effluent. Employees who clear sanitary drain blockages, including use of plungers and snaking, are not considered occupationally-exposed to human blood or OPIMs unless visible blood or other regulated body fluid is present in the work area. Appropriate PPE (e.g., gloves, eye protection, boots, etc.) shall be available to any worker clearing a blockage in sanitary drain systems or during sewage clean-up operations.

- 874 (5) Health Unit Personnel
875 All Health Unit personnel shall follow universal precautions during all tasks that involve
876 potential eye, mucous membrane, or skin contact with human blood, bodily fluids, or OPIMs.
877 Sharps precautions must also be followed.
878
- 879 (6) Police Services Group Personnel
880 All Police Services Group Personnel shall follow the infection control procedures developed
881 and published at the Division/Group level.
882
- 883 (7) Fire Protection Group Personnel
884 All Fire Protection Group Personnel shall follow the infectious control procedures developed
885 and published at the Division/Group level.
886
- 887 (8) NIST Vehicles
- 888 (a) Any blood or body fluids spilled in NIST vans and shuttle buses shall be cleaned up using
889 an appropriate disinfectant and proper procedures. Minimum personal protective
890 equipment shall include gloves and eye protection.
891
- 892 (b) Although the cleanup of vomit is not considered an activity that falls under the
893 requirements of 1910.1030 unless it contains visible blood, it is recommended that
894 precautions be taken to prevent contact with the materials. This includes the use of
895 personal protective equipment such as gloves and eye protection and a general cleaner to
896 wipe surfaces after the vomit has been removed.
897
898

899 **Appendix C: Hepatitis B Vaccine Declination Form**

900
901 **HEPATITIS B VACCINE DECLINATION**

902
903 **SIGNATURE MANDATORY FOR THOSE DECLINING TO BE VACCINATED**

904
905 I understand that due to my occupational exposure to bloodborne pathogens or other potentially
906 infectious materials I may be at risk of acquiring hepatitis B virus (HBV) infection.

907 I have been given the opportunity to be vaccinated with hepatitis B vaccine, at no charge to
908 myself. However, I decline hepatitis B vaccination at this time. I understand that by declining
909 this vaccine, I continue to be at risk of acquiring hepatitis B, a serious disease. If in the future I
910 continue to have occupational exposure to blood or other potentially infectious materials and I
911 want to be vaccinated with hepatitis B vaccine, I can receive the vaccination series at no charge
912 to me.

913
914
915
916 _____
917 Declining Individual's Name (Print clearly)

_____ Date

918
919
920
921 _____
922 Declining Individual's Signature

_____ Social Security Number

926 **Appendix D: Healthcare Professional's Written Opinion Form for Bloodborne Pathogens**
927 **Post Exposure Evaluation and Follow-up**

928

929 To:

930

931 Date:

932

933

934 Healthcare Professional's Written Opinion for Bloodborne Pathogens Post-Exposure
935 Evaluation and Follow-up

936

937

938 Employee Name: _____

939

940

941 Job Title: _____ Division: _____

942

943

944 The above named employee has been informed of the results of the post-exposure evaluation on
945 _____, 20____. Employee has also been told about any medical conditions resulting from
946 exposure to blood or other potentially infectious materials which require further evaluation or
947 treatment.

948

949 Signature: _____ Date: _____

950

951 Healthcare Professional Name: _____

952

953 Cc: Employee

954

Appendix E: Bloodborne Pathogens Training Contents

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The Bloodborne Pathogen training module shall include the following topics:

- (1) An accessible copy of the regulatory text of the OSHA Bloodborne Pathogens Standard and an explanation of its contents;
- (2) Epidemiology and symptoms of HIV, HBV, HCV and other bloodborne pathogens;
- (3) Modes of transmission of HIV, HBV, HCV and other bloodborne pathogens;
- (4) A review of the NIST Bloodborne Pathogens Exposure Control Plan;
- (5) Appropriate methods for recognizing tasks and other activities that may involve exposure to blood and other potentially infectious materials;
- (6) An explanation of the use and limitations of methods that will prevent or reduce exposure including appropriate engineering controls, work practices, and personal protective equipment;
- (7) Sharps injury protection;
- (8) Use and limitations of universal precautions, engineering controls, and work practices;
- (9) Types, selection, proper use, location, removal, handling, decontamination and/or disposal of PPE;
- (10) Information on the Hepatitis B vaccine, including its efficacy, safety, method of administration, the benefits of being vaccinated, and that the vaccine and vaccination will be offered to covered employees free of charge;
- (11) Information on the appropriate actions to take and persons to contact in an emergency involving blood or other potentially infectious materials;
- (12) An explanation of the procedure to follow if an exposure incident occurs, including the method of reporting the incident and the medical follow-up that will be made available;
- (13) Discussion of post-exposure evaluation and follow-up;
- (14) Signs and labeling;

995

996 (15) An opportunity for interactive questions and answers with the person conducting the training
997 session; and

998

999 (16) The person conducting the training shall be knowledgeable in the subject matter covered by
1000 the elements contained in the training suborder as it relates to the workplace that the training
1001 will address.

1002

1003

1004 **Appendix F: Sharps Injury Log**

1005 The OSHA Bloodborne Pathogen standard requires that a Sharps Injury Log be maintained to
1006 record all contaminated sharps injuries in a facility. The purpose of this log is to help users to
1007 evaluate and identify problem devices or procedures that require attention.
1008

Date	Type of Device	Brand Name of Device	Work Area Where Injury Occurred	Brief Description of How the Incident Occurred

1009
1010
1011
1012

1013

Appendix G. Revision History

1014

Revision No.	Approval Date	Responsible Person	Brief Description of Change; Rationale
1	1/5/21	April Camenisch	Updated suborder links. Added Revision History appendix.

1015