

Emerging Analytes of Interest for MDI

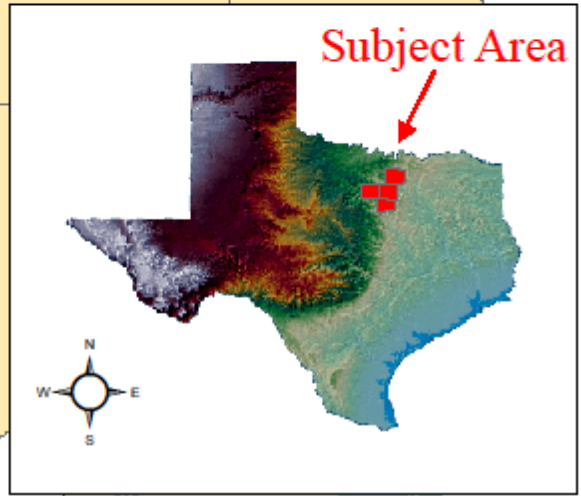
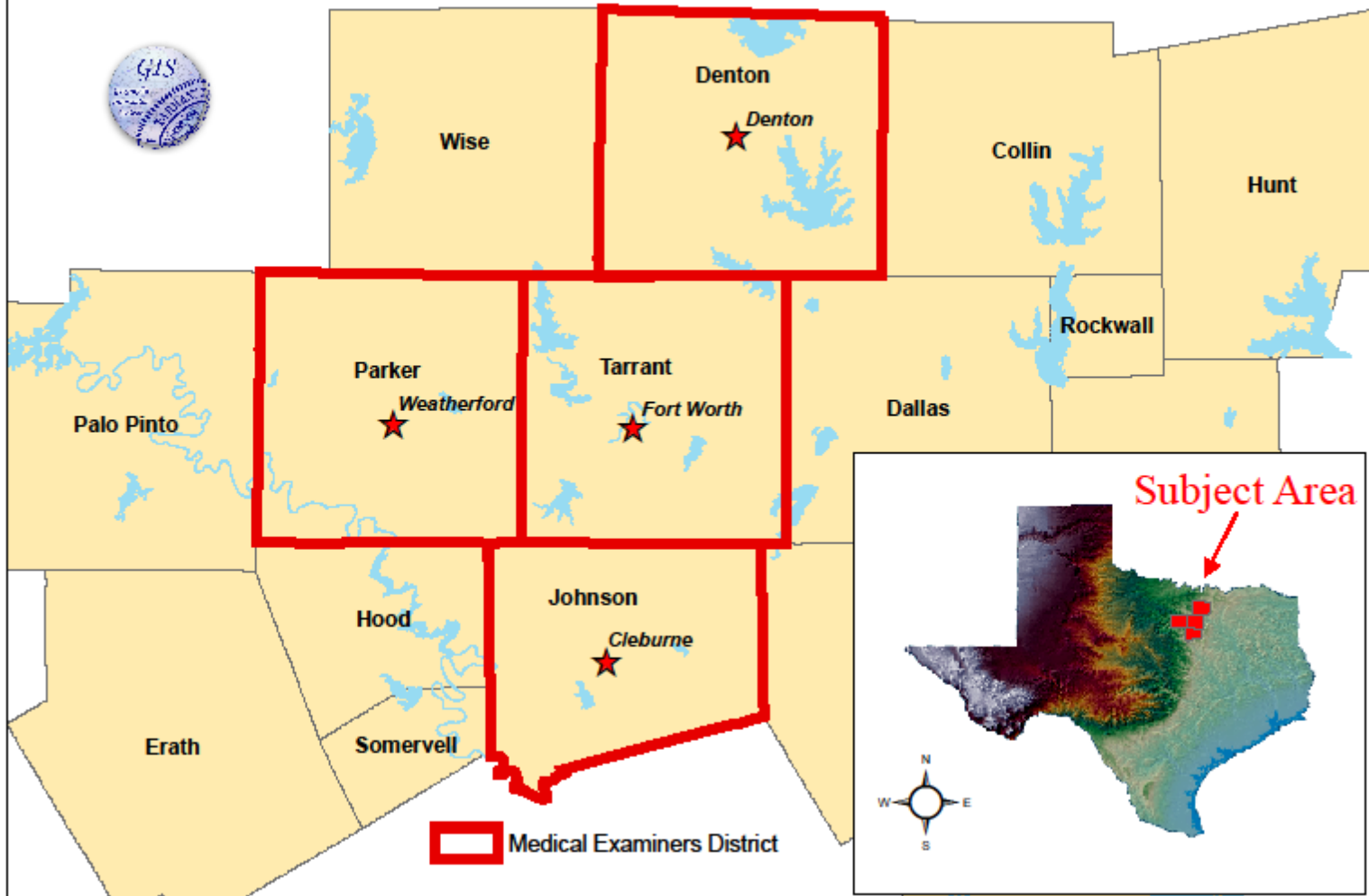
Robert D. Johnson, PhD, F-ABFT
Chief Toxicologist

Tarrant County Medical Examiner's Office

September 14th, 2016 Gaithersburg, MD



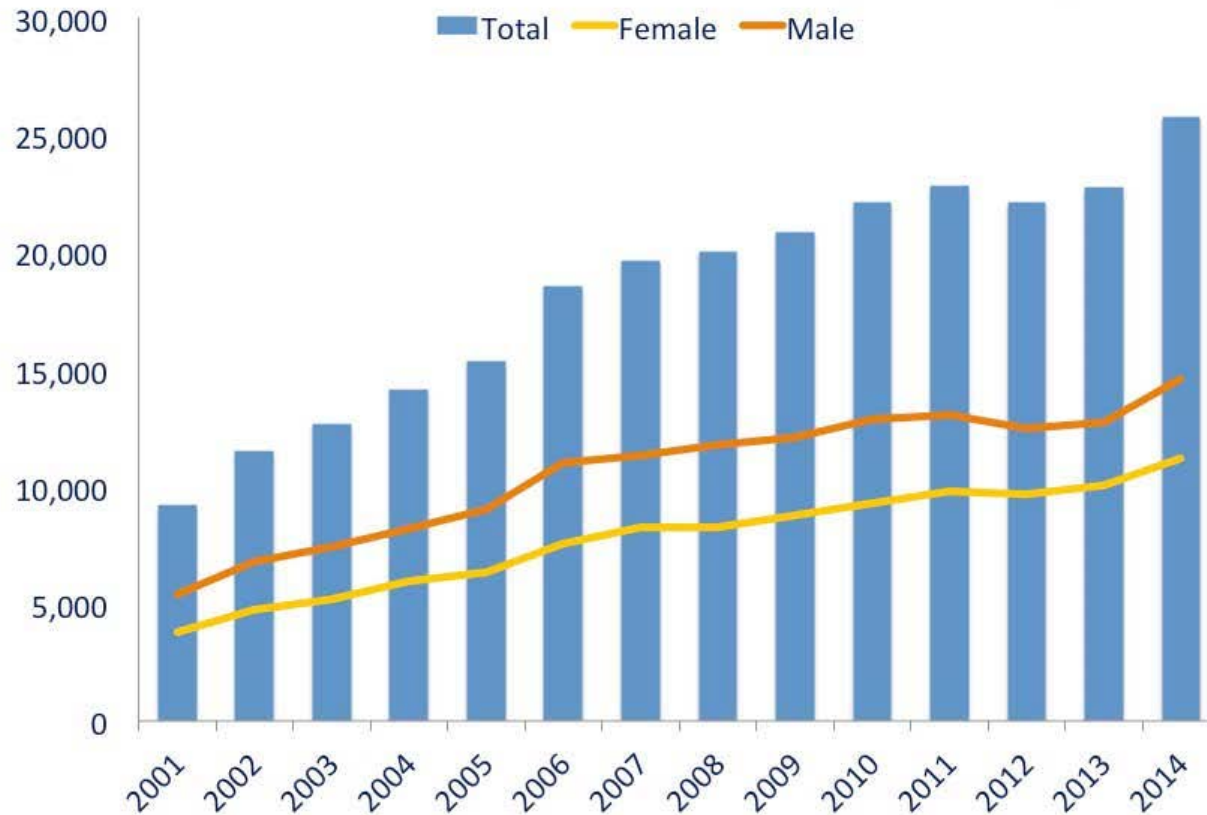
TARRANT COUNTY MEDICAL EXAMINERS DISTRICT



Overdose Deaths by Year



National Overdose Deaths Number of Deaths from Prescription Drugs



Source: National Center for Health Statistics, CDC Wonder

Local 2016 Statistics

- Our office had 177 drug OD deaths (January-July).
1,641 total PM cases
 - ~10% of PM cases were OD
- ~75% are accidental
- ~60% were opioid-related

Novel Psychoactive Substances

- NPS — newly used designer drugs ("internet drugs", "research chemicals", "legal highs") which pose similar health risks to classic illicit substances

The NPS Problem

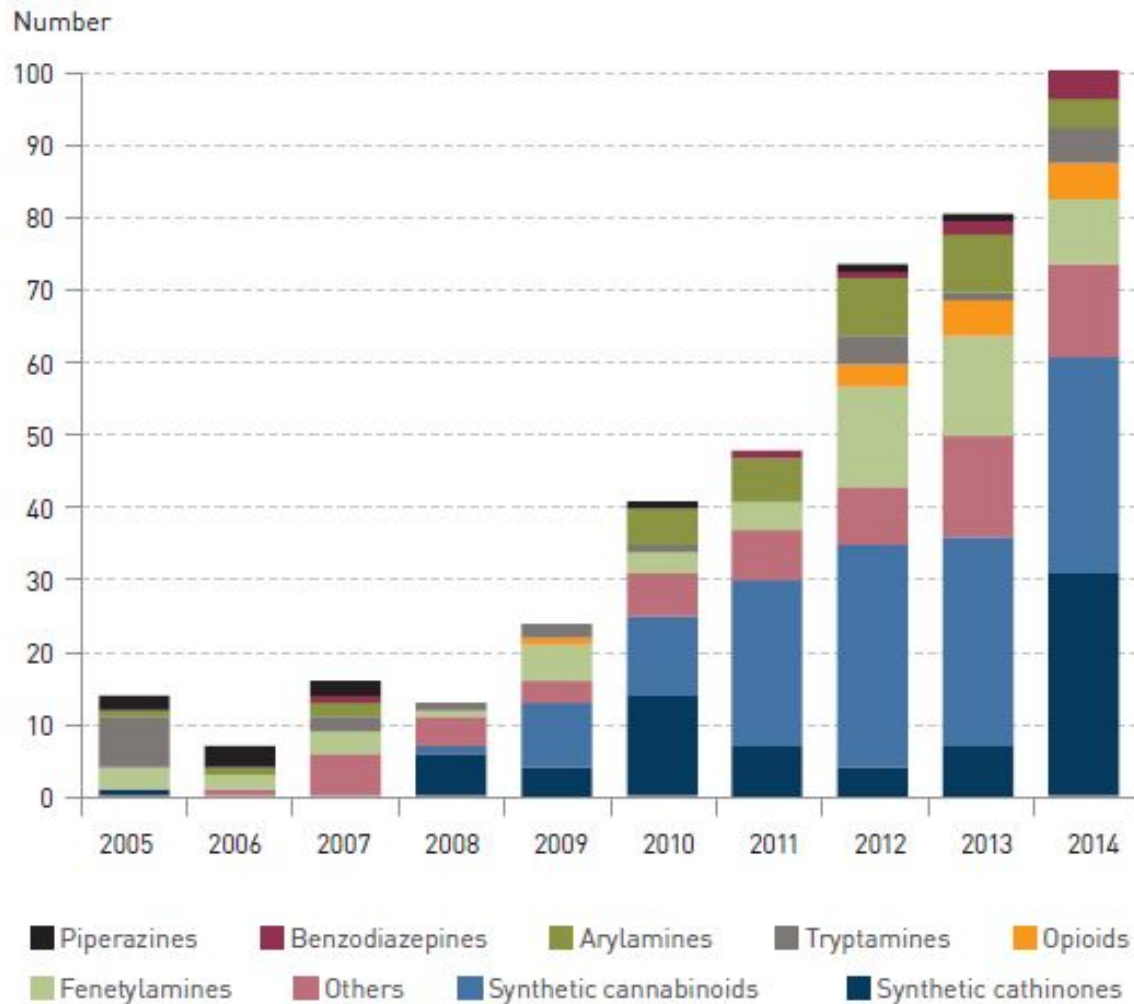
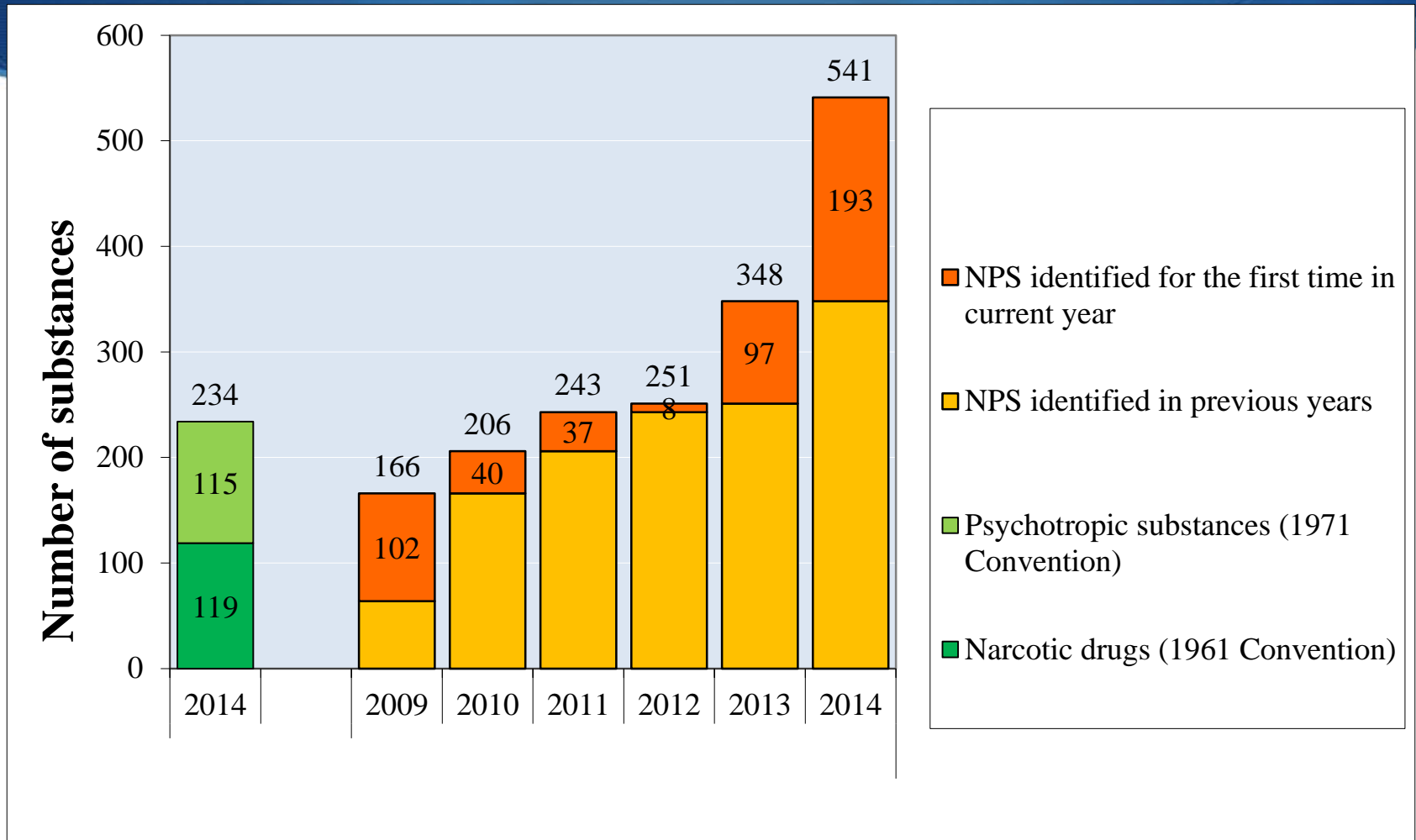


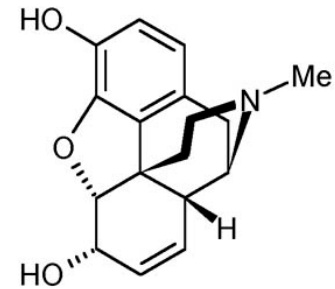
Figure 1 Number and categories of novel psychoactive substances that are reported annually to the EU's early warning system, based on a figure in the organisation's report (1). Reprinted with permission from the European Monitoring Centre for Drugs and Drug Addictions (EMCDDA)

Controlled drugs and NPS

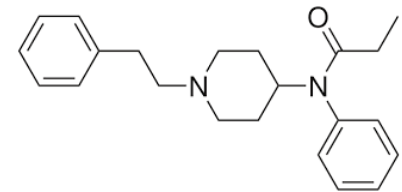


Designer Opioids

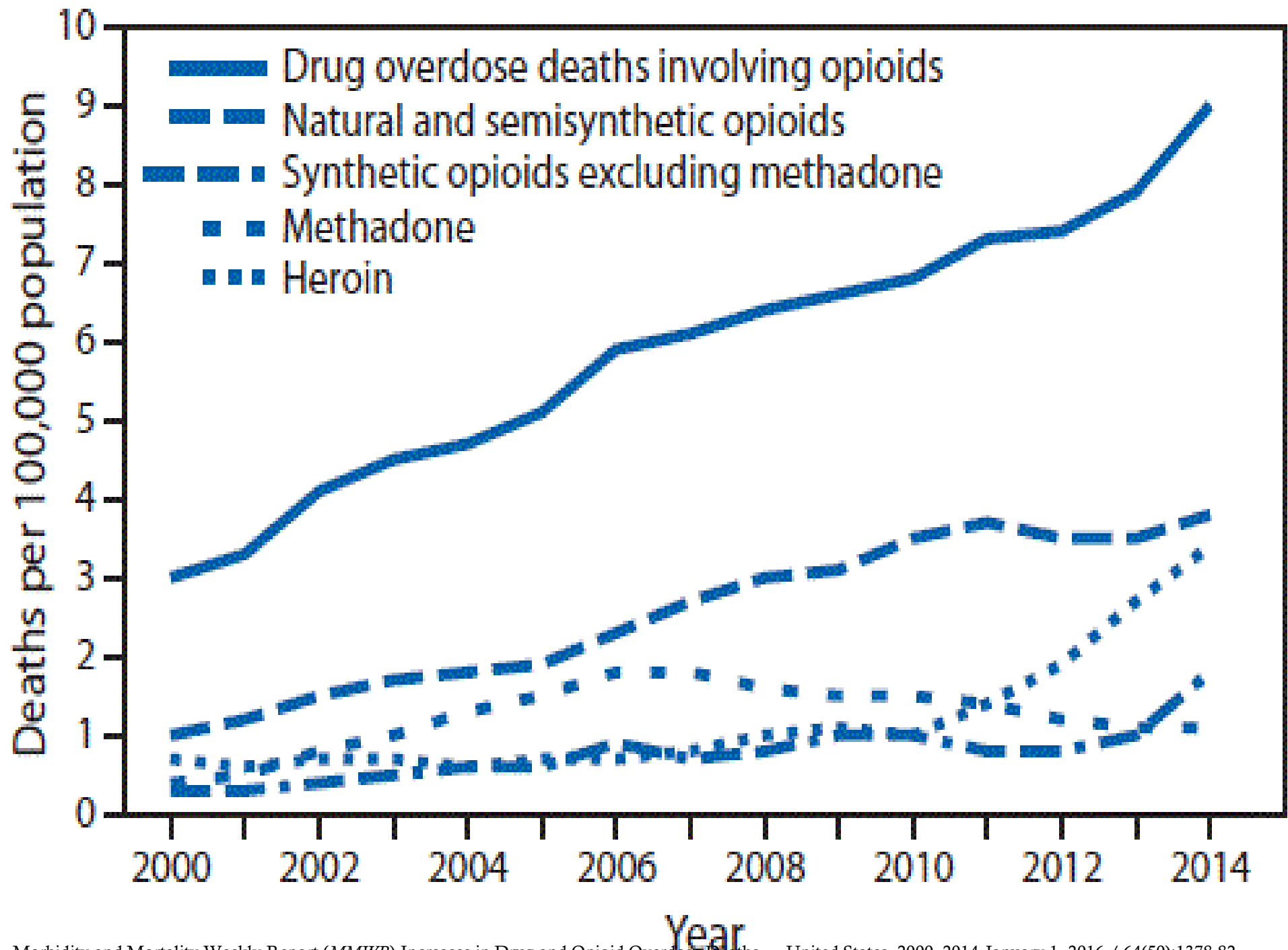
- Opioids (Can the good old drugs be made “better”?)
 - Hydrocodone
 - Codeine
 - Morphine
 - Oxycodone
 - Methadone
 - Tramadol
 - Hydromorphone
 - Oxymorphone
 - Fentanyl



Morphine



Fentanyl

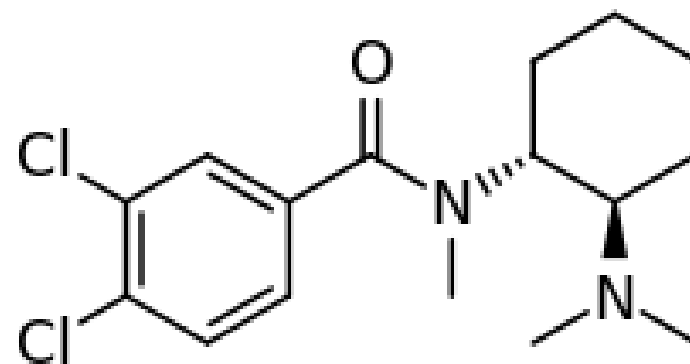
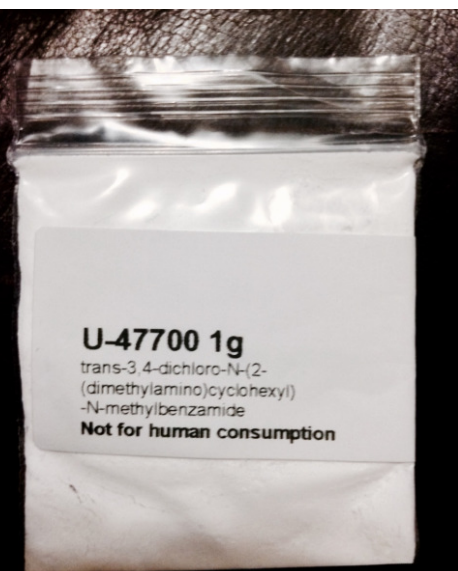


U47700

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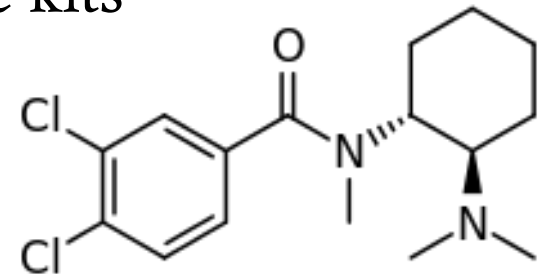
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U47700

- U-47700
 - Developed in the 1970's
 - 8 times more potent than morphine
 - Readily available online
 - strong analgesia, sedation, euphoria
 - Death due to respiratory depression
 - Does not cross-react with ELISA opiate kits
- Seven OD's in last 3 months



Fentanyl Analogues

- **Acetylfentanyl**
 - Between five to fifteen times more potent than heroin
 - 80 times more potent than morphine
- **Butyrylfentanyl**
 - Readily available online
- **Furanylfentanyl**
 - Sold as Fu-F
 - ~\$40 per gram
 - 1 mg = 100 mg of morphine



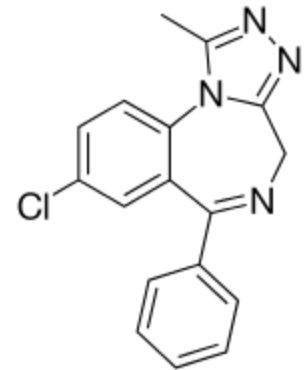
Other Designer Opioids

- MT-45
 - Equipotent to morphine
 - OD's reported
- W-18
 - No potency information currently available
 - Numerous deaths in the Northeast

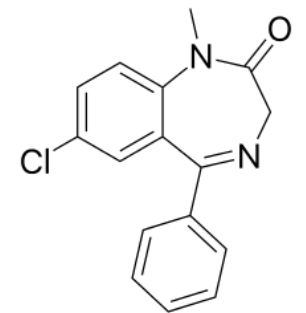
Designer Benzodiazepines

- Benzos (Can the good old drugs be made “better”?)
 - Diazepam
 - Alprazolam
 - Lorazepam
 - Clonazepam
 - Oxazepam
 - Temazepam

- Phenazepam
- Etizolam



Alprazolam



Diazepam

Of Course They Can

- Diclazepam
- Flubromazepam
- Pyrazolam
- Clonazolam
- Deschloroetizolam
- Flubromazolam
- Nifoxipam
- Meclonazepam



Designer Benzodiazepines

- Clonazolam
 - Highly potent
 - Strong sedation and amnesia at oral doses of 0.5 mg
- Flubromazolam
 - Life-threatening adverse reactions have been observed at doses of 3 mg



Other NPS

- 3-methoxyPCP
- 4-methoxyPCP
- 3-Fluoromethamphetamine
- 4-Fluoromethamphetamine
- 4-Methoxymethamphetamine (PMMA)
- Hundreds more...



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Questions



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