

Methamphetamine Contamination of a Stolen Recreational Vehicle

In January 2017, the Environmental Epidemiology Program (EEP), Utah Department of Health received a request for technical assistance from a recreational vehicle (RV) dealer acting on behalf of an RV owner. The RV in question was stolen and later recovered by law enforcement personnel, who discovered items suggesting that the stolen RV had been used as a clandestine laboratory for manufacturing methamphetamine. The owner is concerned about potential health effects from exposure to residual methamphetamine and manufacturing components should the RV be used again, particularly in regards to their grandchildren.

Methamphetamine is an extremely addictive, potent central nervous system stimulant (NIDA, 2014). In the U.S., methamphetamine is classified as a Schedule II drug under the Controlled Substances Act, meaning that it has high potential for abuse and limited medical use (DEA, 2017). While it can be prescribed by a doctor (under the trade name Desoxyn®), it is far more commonly used on an illegal, recreational basis.

There has been a decline in domestic production of illicit methamphetamine recently, although use may be increasing (DEA, 2016). However, small-scale clandestine laboratories remain a serious issue in the U.S., as it is relatively cheap and simple to make, using easily obtained ingredients and chemicals (DEA, 2016; DEA, 2017; NIDA, 2014). There roughly five main manufacturing methods in use at clandestine laboratories, all of which use a variety of toxic, corrosive, flammable, and/or volatile ingredients (DEA, 2016; EPA, 2013). Often, the chemicals used to make methamphetamine are more harmful than the methamphetamine itself. The U.S. Drug Enforcement Administration (DEA) has estimated that five to six pounds of toxic waste are produced for every pound of methamphetamine (DEA, 2005).

Health effects caused by non-abuse exposure to methamphetamine and its ingredients depend on the process and chemicals used, the concentration of the chemicals, the length of the exposure, and the age and health of the person exposed. Appendix C of EPA's Voluntary Guidelines for Methamphetamine Laboratory Cleanup is a good summation of common chemicals associated with methamphetamine, their health effects, and their fate and transport (EPA, 2013). Symptoms associated with short-term exposure to clandestine drug labs include headache, nausea and vomiting, difficulty breathing, and irritation of the respiratory tract, skin, and eyes (EEP, 2016). There is little information on the effects of long-term environmental exposure to methamphetamine. Most data has been gathered from studies on individuals who intentionally use the drug. Symptoms that have been associated with long-term methamphetamine exposure include insomnia, irritability, hyperactivity, anorexia and weight loss, anxiety, poor concentration, and personality changes (EEP, 2016).

In Utah, the requirements for testing and decontaminating clandestine drug laboratories are set forth in Utah Rule R392-600 in the Utah Administrative Code (UAC, 2016). The rule is specific for properties used to manufacture illicit drugs, but can be used as guidance for cleaning properties where only recreational use occurred. The term 'property' used in R392-600 is inclusive of motor vehicles and trailers. There are several term definitions in the rule that have bearing on this situation:

- Highly suggestive of contamination: the presence of visible or olfactory signs indicative of contamination, locations in and around where illegal drug production occurred, where hazardous materials were stored or suspected of being used to manufacture illegal drugs, or areas that tested positive for contamination or other portions of the property that may be linked to processing and storage areas by way of the ventilation system or other activity that may cause contamination to be distributed across the property.
- Not highly suggestive of contamination: areas outside of the main locations(s) where illegal drugs were produced and hazardous materials were stored or suspected of being used that do not reveal obvious visual or olfactory signs of contamination, but may, however, be contaminated by residue from the manufacture or storage of illegal drugs or hazardous materials.
- Porous: material easily penetrated or permeated by gases, liquids, or powders such as carpets, draperies, bedding, mattresses, fabric covered furniture, pillows, drop ceiling or other fiber-board ceiling panels, cork paneling, blankets, towels, clothing, and cardboard or any other material that is worn or not properly sealed.
- Non-Porous: resistant to penetration of liquids, gases, powders and includes non-permeable substance or materials, that are sealed such as, concrete floors, wood floors, ceramic tile floors, vinyl tile floors, sheet vinyl floors, painted drywall or sheet rock walls or ceilings, doors, appliances, bathtubs, toilets, mirrors, windows, counter-tops, sinks, sealed wood, metal, glass, plastic, and pipes.
- HEPA: high-efficiency particulate air. This indicates the efficiency of an air filter or air filtration system.

Methamphetamine testing of the RV revealed low levels of the drug, the highest result being $0.115 \mu\text{g}/200 \text{ cm}^2$ in the air conditioning unit. This level is below the Utah decontamination standard of $1.0 \mu\text{g}/100 \text{ cm}^2$ and indicates that there are unlikely to be high health risks related to methamphetamine for adults and children. However the RV dealer stated that law enforcement personnel discovered items in the RV suggestive of methamphetamine manufacture and not just recreational use. If so, the RV may still fall under the definition of “highly suggestive of contamination”. The owner of the RV in question is encouraged to consult with their local health department for clarification of this issue.

Section five of Rule R392-600 details decontamination procedures, including those for motor vehicles. It states that a preliminary assessment must be conducted to determine contamination. If the motor vehicle is contaminated and cannot be cleaned in a manner consistent with R392-600, the motor vehicle may no longer be occupied and must be properly disposed of (UAC, 2016). In areas highly suggestive of contamination, all porous materials must be removed and properly disposed of [R392-600-5(6)(a)]. This is consistent with EPA’s voluntary guidelines, which states that most contaminated carpets, upholstered furniture, clothing, fabrics, and mattresses should be discarded (EPA, 2013). For areas not highly suggestive of contamination, R392-600-5(10)(a) states that porous materials with no evidence of staining or contamination may be cleaned by HEPA vacuuming followed by either steam cleaning or at least three cycles through a washing machine with detergent and water (UAC, 2016).

Decontaminating clandestine laboratories can be expensive. The Institute for Intergovernmental Research estimated that the average cost can range from \$5,000 to \$150,000 (EPA, 2013). Decontaminating mobile vehicles/residences can be more difficult than cleaning fixed structures, as they often contain more porous and absorbent materials (EPA, 2013). The issue is complicated by the fact that porous materials typically cannot be quantitatively tested for methamphetamine or the harmful ingredients. Some states have found it to be cost prohibitive to clean mobile residences. For example, Minnesota's "Clandestine Drug Lab General Cleanup Guidance" states that they may be difficult and costly to remediate and demolition should be considered (MDH, 2013). Tennessee notes that motor vehicles contaminated as a result of methamphetamine manufacturing activities are rarely worth cleaning for reuse and will often have little value outside of salvage for parts and scrap metal (TDEC, 2017). The cost-effectiveness of remediation versus disposal for contaminated motor vehicles must be decided by the owner, in conjunction with their insurance company and other affected parties.

Further information about methamphetamine in Utah, including abuse, manufacture, health effects, and decontamination standards and rules can be found at www.health.utah.gov/meth.

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