

Health Consultation

CLANDESTINE DRUG LAB IN MENOMONEE FALLS APARTMENT

MENOMONEE FALLS, WAUKESHA COUNTY, WISCONSIN

DECEMBER 7, 2004

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Public Health Service
Agency for Toxic Substances and Disease Registry
Division of Health Assessment and Consultation
Atlanta, Georgia 30333

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In addition, consultations may recommend additional public health actions, such as conducting health surveillance activities to evaluate exposure or trends in adverse health outcomes; conducting biological indicators of exposure studies to assess exposure; and providing health education for health care providers and community members. This concludes the health consultation process for this site, unless additional information is obtained by ATSDR which, in the Agency's opinion, indicates a need to revise or append the conclusions previously issued.

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HEALTH CONSULTATION

CLANDESTINE DRUG LAB IN MENOMONEE FALLS APARTMENT

MENOMONEE FALLS, WAUKESHA COUNTY, WISCONSIN

Prepared by:

Wisconsin Department of Health and Family Services
Under a Cooperative Agreement with the
Agency for Toxic Substances and Disease Registry

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Summary

The Wisconsin Department of Health and Family Services (DHFS) prepared this health consultation at the request of the Waukesha County Health Department of Health and Human Services. DHFS was asked to investigate the health concerns and cleanup of an illegal, clandestine drug laboratory in a 20-unit apartment building in Menomonee Falls, Wisconsin. DHFS inspected the apartment, developed an abatement and reoccupancy plan, and informed building residents about associated health risks.

DHFS concluded that before and during the seizure of the clandestine lab by law enforcement officers, chemical contamination inside the drug lab apartment was a *public health hazard*. Chemical hazards in the drug lab apartment required immediate abatement to avoid exposure to current and future occupants of the apartment where the drug lab was located. DHFS concluded that the hallway outside the drug lab apartment was an *indeterminate public health hazard*. As a precautionary measure, DHFS recommended that the abatement order include the hallway. Methamphetamine residue tests and precautionary cleaning of the hallway were recommended to locate and eliminate potential exposure pathways to building residents. DHFS recommended building residents remain temporarily relocated until hazards from the drug lab apartment were removed. DHFS found no evidence of a public health hazard *within* other residential apartments in the building. The abatement order specified interim conditions to be met before allowing general reoccupancy of the apartment building. As these conditions were being fulfilled, a public meeting was held with building residents to address their health concerns.

Background and Statement of Issues

On May 12, 2004, Menomonee Falls Police were called to a 20-unit apartment building, at N80 W15051 Appleton Avenue, in Menomonee Falls, Waukesha County, to investigate a foul odor coming from a residence.

For about 1 month before the discovery and seizure of the clandestine drug lab by law officers, other residents of the apartment building had complained to the property owner of foul odors in the hallways of the apartment building. During this period, the apartment manager was unable to determine the odor's source. The residents variously described the odors as similar to urine-sodden diapers, dead fish, or dead and decaying bodies. No residents reported health problems they could attribute to these odors, though some said they became nauseous when the odor was particularly strong. Approximately 2 weeks before the discovery, the apartment building manager conducted an annual inspection of each unit. The manager did not observe anything unusual in any apartment, including the apartment where the clandestine lab was located.

On May 12, the odor in the apartment hallway was so strong that the building manager was able to identify one apartment as the likely source of the odor. The building manager reported that the odors outside the closed door of the apartment were strong and nauseating. Officers from the Menomonee Falls Police Department responded to the apartment manager's call and that apartment's tenant consented to their entry. When

officers first entered the drug lab apartment, they noted a large number of powdered and liquid chemicals, many in original and sealed containers from a chemical supplier, and a wide array of chemical and mechanical laboratory equipment. Further investigation and questioning led to an escalated encounter, during which the suspect threw acid on an officer's arm. As the officers withdrew, the suspect reportedly made threats to blow up the apartment building. He locked the apartment door, broke out the apartment's windows, and began breaking glass chemical containers on the floor of the apartment. Because of the bomb threats from the suspect, and the potential chemical hazards observed in the apartment, police ordered the building evacuated. Evacuating the building was an appropriate precaution for the safety of residents.

The Waukesha Police Department Tactical Squad ultimately made a forced entry into the apartment unit and subdued the suspect. Officers reported at least two minor chemically-related injuries during this encounter. A caustic agent thrown by the suspect splashed on the arm of one officer. The officer later reported a localized chemical burn and was treated at the emergency room. Other officers were treated for minor chemical skin burns, and minor eye and lung irritation (Menomonee Falls Police Department, personal communication, May 13, 1994). When officers subdued the suspect, they applied an electrical stun gun to the suspect's leg. That resulted in the suspect's pants briefly catching fire, apparently due to the stun gun igniting flammable solvents. Officers also observed a fog hovering approximately 1½ feet above the floor of the apartment. This fog was likely chemical vapors released when containers were broken by the suspect. Later air screening did not identify all vapor constituents. The vapor fog did not explode or ignite when the stun gun was used.

In response to threats made by the suspect, the regional bomb squad arrived and evaluated the apartment. The squad found a possible pipe bomb, which they removed from the apartment and properly disposed. The subsequent investigation of the apartment by lab-certified law enforcement agents led to the arrest of the resident for possession and illegal manufacturing of 3,4-methylenedioxy-methamphetamine (MDMA or "Ecstasy") and methamphetamine (meth). From the amount of chemical precursors, reagents, and final products, law enforcement classified this as a high production clandestine laboratory. After a preliminary review of equipment and chemicals in the apartment, law enforcement officials concluded that the suspect was probably using the "red phosphorus" method (vs. ammonia) to synthesize methamphetamine. This was the first time that Wisconsin law enforcement encountered a clandestine lab of this scale.

During the initial safety screening of the apartment by law enforcement and first responders, they tested the air and declared the apartment safe in terms of carbon monoxide, explosivity, oxygen content, and hydrogen sulfide concentration. However, law enforcement officials did not have the equipment to screen air of the apartment for vapors of phosphine or ammonia. Because phosphine and ammonia vapors are often a concern at clandestine drug labs, these compounds are typically screened by law officers during drug lab seizures. Toluene, at 14 parts per million (ppm), was the only specific chemical positively identified, by field screening methods, in the apartment air (Menomonee Falls Police Department, personal communication, May 13, 1994).

Bulk chemicals in the apartment were removed by environmental contractors hired by the Wisconsin Department of Justice, Division of Criminal Investigations. More than 1,000 pounds of chemicals were removed from the apartment, including acetone (10 lbs.), alcohol (24 lbs.), aluminum (15 lbs.), benzene (15 lbs.), charcoal lighter fluid (8 lbs.), chloroform (37 lbs.), white gas/camping fuel (12 lbs.), ether (20 lbs.), hydrogen peroxide (20 lbs.), lithium metal (4 lbs.), magnesium (30 lbs.), mercuric chloride (18 lbs.), methyl ethyl ketone (8 lbs.), potassium metal (19 lbs.), red phosphorus (13 lbs.), sodium chloride (3 lbs.), sulfuric acid (29 lbs.), thionyl chloride (14 lbs.), and toluene (28 lbs.). The chemicals were packaged, inventoried, and transported by the environmental contractor for proper disposal (see Appendix I).

At the time DHFS was contacted by the County of Waukesha, the immediate public health issue was when to allow the re-entry of evacuated residents. DHFS advised city and county agencies about the abatement specifics needed to make the drug lab apartment and the entire apartment building safe for future occupancy. DHFS also evaluated other areas in the apartment building for potential public health hazards.

Public Health Inspection

After being cleared for entry by lab-certified law enforcement authorities, DHFS assisted the local health department and the property owner in inspecting the drug lab apartment. When DHFS staff entered the apartment by, they noticed a rank, unidentified odor consistent with earlier complaints from apartment residents. They did not smell the odor in the hallway. DHFS used a photo ionization detector (PID) to evaluate the apartment and measured approximately 1.5 ppm total volatile organic compounds in air throughout the apartment. At the time of the DHFS inspection, the drug lab apartment and several adjacent units had been well-ventilated for more than 24 hours. A thorough inspection of the apartment revealed evidence of several small chemical spills, but there was no indication that chemicals were widely spilled or dumped on the floor or heavily splashed on the walls. At the location where the officer was reportedly splashed with acid, a small area of carpet had turned into a darkened and gelatinous patch. Small, reddish stains were apparent on the carpeting at other locations throughout the living room. Several walls, doors, and the wall air-conditioning unit were splattered with a dried, whitish sludge. In the kitchen, food from the refrigerator and freezer was piled on the floor and sitting in a pool of an opaque and viscous liquid. The unidentified odor was also very strong in the kitchen. In the bathroom, lab equipment and debris suggested this room as the location of actual drug manufacture.

In the two apartments adjacent to the drug lab, in the building manager's apartment, in common areas, and in all corridors of the building, the PID registered at background levels of volatile compounds. Most of the building residents were allowed to return to their apartments later that day, after the corridor carpets had been cleaned. For reasons of security, the corridor immediately around the drug lab apartment was restricted. The residents of the two other apartments served by that corridor were not permitted to return until the hallway was cleaned and all materials and conditions of concern in the drug lab apartment were diminished.

Discussion

Conditions in the drug lab apartment and adjacent apartments apparently varied before, during, and after the lab was seized. DHFSDHFS evaluated each interval independently to assess the possibility of past exposures and the potential for future exposures. No evidence was found of past exposures to residents of adjacent apartments that were a health concern. Following the evaluation by DHFSDHFS and the Waukesha County Health Department, abatement recommendations were made to restore the drug lab apartment to be acceptable for habitation and to rule out potential exposures to other apartment residents.

Very little analytical information is available from the time of the Menomonee Falls drug lab seizure. The descriptions provided by law enforcement officials, however, are evidence that a *public health hazard* existed within the drug lab apartment when it was seized. Officers reported intentional chemical spills by the suspect, after law officers entered, which released volatile chemicals, particularly toluene, in the drug apartment. Officers reported visible vapors hovering above the floor, apparently from various broken chemical bottles, suggesting a hazardous atmosphere. The large volume of flammable solvents also posed a physical hazard from the risk of fire and explosion. The rapid ignition of the suspect's clothing was evidently related to spilled flammable solvents and was another indication of an inhalation hazard. Caustic liquids spilled and thrown by the suspect posed an acute respiratory and dermal hazard for law enforcement officers who were not wearing personal protective equipment.

The foul odor reported by residents (discussed below) suggests phosphine, which may have been a hazard to anyone inside the apartment. Responders did not screen air inside of the drug lab apartment for phosphine. Air monitoring after the lab was seized showed that solvent vapors were elevated, but only toluene was measured at a level of potential concern (14 ppm). While this level of toluene is above ATSDR's acute minimal risk level (MRL) of 1.0 ppm, it does not approach threshold levels in humans (the no-observed-adverse-effect level is 40 ppm) and it is unlikely that short-term exposure in this situation posed a public health concern.

Indoor air quality *within* the Menomonee Falls drug lab apartment was probably a *public health hazard* before it was seized by police. That conclusion is based on the reports of odors from apartment residents and information from similar cases elsewhere. Acute health hazards are commonly associated with methamphetamine and to occupants of clandestine drug labs. We do not have indoor air data or impartial observations of conditions inside the drug lab apartment before police arrived. It is likely, however, that during the time drugs were being made, vapors were released within the apartment that were an inhalation health hazard. Martyny *et al.* (2004) reported conditions at several staged methamphetamine laboratories that used the red phosphorus method. They found elevated indoor air concentrations of several compounds, including phosphine, hydrogen chloride, and iodine, that would pose an inhalation health hazard for occupants. Martyny *et al.* concluded that chemical irritation was the most common health symptom

experienced by law enforcement officers who entered a clandestine methamphetamine lab.

An unanswered question about this particular clandestine drug lab is the source of the strong odor in the apartment, which was never identified. The materials found in the apartment by public health staff and the smells described by residents suggest that the odor may have included, or was related to, phosphine (H_3P). Phosphine is commonly produced as a by-product of manufacturing methamphetamine by the red phosphorous/iodine method. Phosphine, a poisonous gas, reportedly has a decaying fish odor (Merck 1996). The gas may accumulate in the indoor air of poorly vented clandestine drug labs, and has caused fatalities to people illegally making methamphetamine. Phosphine gas is flammable, explosive, and irritating. Acute exposures can damage cells in the heart and lungs, and can result in cardiac arrest and pulmonary edema (ATSDR 2001). Nausea and vomiting are typical first symptoms following phosphine exposure. Both the National Institute for Occupational Safety and Health (NIOSH) and the Occupational Safety and Health Administration (OSHA) 8-hour time-weighted average (TWA) for phosphine is 0.3 ppm. The NIOSH short-term exposure limit (STEL) is 1.0 ppm and the OSHA “immediately dangerous to life and health” level is 50 ppm (NIOSH 1994). Phosphine has a geometric mean odor threshold of 0.14 ppm (AIHA 1989), which falls below the TWA and STEL.

DHFS concluded that before police seized the Menomonee Falls drug lab apartment, an *indeterminate public health hazard* for indoor air existed *within* the corridor immediately adjacent to the drug lab apartment. DHFS concluded there was no hazard in other portions of the corridor, common areas, and other residential units of the apartment building. The *indeterminate* conclusion was based on our qualitative assessment and “no detection” of methamphetamine from corridor wall wipe samples taken outside the apartment. The human health assessment of other apartments and corridors beyond the drug apartment were based upon qualitative judgement and limited instrument screening. As described above, at the time DHFS first entered the building, the drug apartment and adjacent apartments and corridors had been well-ventilated for more than 24 hours. At that time, DHFS detected no odors or instrument readings outside of the drug apartment that would have suggested a health concern. At a follow-up meeting (May 17, 2004) with residents, most of those attending reported they noticed the strong odor coming from the drug apartment. None reported any symptoms that they felt were caused by the odors.

As a precautionary measure, DHFS staff recommended wipe sampling of the hallway wall just outside the door to determine whether any methamphetamine residues had escaped and moved beyond the drug lab apartment. In follow-up, the abatement plan required that wipe samples be collected from the doorway of the drug lab apartment and analyzed for methamphetamine (see Appendix II, Abatement Plan). Martyny *et al.* demonstrated that methamphetamine could be transported through the air and deposited at other locations during the acid precipitation phase of makeshift methamphetamine production. No methamphetamine was detected in the wipe samples. Because the abatement plan ordered thorough cleaning and coating of all surfaces within the

apartment, DHFS determined that no further testing was necessary to assure the safety of current or future apartment residents.

Health Concerns of Residents

Most of the apartment residents re-occupied their homes after three nights spent in a hotel or elsewhere. Because of the duration of the evacuation, the news coverage, and the controversy surrounding the case, state and local officials anticipated residents would have health-related questions. DHFS, at the request of local authorities held a public meeting for the apartment residents on May 17, 2004. Several of the first-responding law officers who may have had exposures also attended to discuss their health concerns.

During the meeting with residents, DHFS presented background information on clandestine labs, then answered questions from the group and from individuals. DHFS told residents that there was significant contamination in the drug lab apartment and it needed rigorous cleaning. The contamination appeared to be confined to that unit, however, and did not pose a public health hazard to other residents' apartments in the building. Most residents at the meeting reported they noticed a strong odor coming from the drug lab apartment. None of the residents reported they had respiratory irritation or any other symptoms that they linked in any way with contamination or odors coming from the drug lab apartment. Several residents at the meeting said they were concerned that their family's health would be affected by contamination from the apartment where the drug lab was located. DHFS advised residents to see their physician if they remained concerned or they later developed any symptoms that they felt may be related to contamination from the drug lab apartment. DHFS also said residents could have their physicians directly contact the DHFS Chief Medical Officer for Environmental and Occupational Health. As of the date of this health consultation, DHFS has not been contacted by any residents or their health care providers.

Child Health Considerations

Residents and building managers reported that no children lived or visited the Menomonee Falls apartment unit where an illegal drug lab was located. However, children and pregnant women *do* reside in other units of the Menomonee Falls apartment building. The DHFS evaluation of the human health implications of contamination at the drug lab apartment and potential health concerns for other residents in the building assumed the presence of young children and pregnant women. DHFS did not identify any situations in which children or pregnant women were likely to be exposed to harmful levels of chemical contaminants coming from this drug lab apartment.

DHFS is extremely concerned about children who live in or visit a place where there is a clandestine methamphetamine drug laboratory. Clearly, the presence of and poor handling of chemicals and products in illegal drug labs poses a significant health hazard for all people present, but particularly for young children (Horton *et al.* 2003). Furthermore, it is increasingly clear that young children who live in illegal drug labs are also at high risk of neglect and sexual abuse. This has become a growing issue of national concern, topically called *drug endangered children*.

Abatement Plan

Once access is restricted to an illegal clandestine drug lab and the drug lab chemicals and materials are removed, hazards to the general public are usually minimal. In some cases, drug or other chemical residues may remain a health hazard to future residents. A public health inspection of the property is usually needed to avoid potential exposure to unsuspecting residents. Abatement or cleanup of the property may be ordered to provide reassurance to future occupants and to remove general public health nuisance conditions coincidentally associated with drug lab properties.

Results from the inspection of the apartment and the rest of the building were used in developing an abatement plan for the site (Appendix II). Because most chemical hazards are usually removed during the seizure phase of such cases, DHFS had previously adopted an approach to drug lab cleanups. That approach emphasizes a visual evaluation and conventional cleaning methods over chemical testing and environmental-contractor abatement. For DHFS (2003) guidelines, see Appendix III or visit URL: <http://DHFS.wisconsin.gov/eh/ChemFS/pdf/MethFS.pdf>.

The abatement plan included an order to have the corridor walls adjacent to the drug lab doorway tested for methamphetamine residues. No methamphetamine was detected. The order for these tests was consistent with recent research by Martyny *et al.* (2004) demonstrating that methamphetamine can disperse as an aerosol during its makeshift manufacture. The abatement plan ordered thorough cleaning and coating of all surfaces within the apartment. Consequently, no further testing was necessary to assure the safety of future occupants.

Conclusions

- Chemical contamination and physical (fire) hazards inside the Menomonee Falls drug lab apartment were a *public health hazard* when it was seized by law enforcement officers.
- Before being seized by police, the indoor air quality inside of the Menomonee Falls drug lab apartment posed a *public health hazard* in the past.
- Indoor air immediately adjacent to the drug lab apartment was an *indeterminate public health hazard* in the past.
- There are no past or current public health hazards *within* other residential apartments in the building.
- DHFS's abatement plan removed any potential health hazard from this incident for the future.

Recommendations

None.

Public Health Action Plan

- Upon recommendation by DHFS, the building owner abated chemical hazards in the drug lab apartment before the apartment could be deemed fit for habitation. See abatement plan, Appendix II.
- Upon recommendation by DHFS, the building owner contracted professional methamphetamine tests and precautionary cleaning of the corridor adjacent to the drug lab apartment.
- DHFS recommended building residents remain temporarily relocated until hazards from the drug lab apartment were removed. Building residents were permitted to occupy their apartments as soon as possible under the details described in the abatement plan, Appendix II.
- DHFS conducted a public meeting for the apartment residents, in cooperation with the Menomonee Falls Police Department and the Waukesha County Health Department to address the public health concerns of the apartment building residents.

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Appendix I

Waukesha County Department of Health and Human Services and Department of Parks and Land Use Environmental Health Division

The following is a list of chemicals taken from the Concord Apartments, Unit 208, N80 W15051 Appleton Avenue, Menomonee Falls, on May 14, 2004, by the hazardous waste disposal contractor.

Concord Apartments

Unit 208

Chemical Inventory

Date: 5/14/04

Chemical	Shipping Name and Hazard Class
1 Ethyleneglycol diethyl ether	Combustible Liquid
2 Sulfuric acid	Corrosive Liquid, Acidic, Inorganic N.O.S.*
3 Nitric acid	Corrosive Liquid, Acidic, Inorganic N.O.S.
4 Phosphoric acid	Corrosive Liquid, Acidic, Inorganic N.O.S.
5 Antimony chloride	Corrosive Liquid, Acidic, Inorganic N.O.S.
6 Antimony pentachloride	Corrosive Liquid, Acidic, Inorganic N.O.S.
7 Formic acid	Corrosive Liquid, Acidic, Organic N.O.S.
8 Lithium chloride	Corrosive Solid, Acidic, Inorganic N.O.S.
9 Phthalic anhydride	Corrosive Solid, Acidic, Organic
10 Chloroacetic acid	Corrosive Solid, Acidic, Organic
11 Trichloroacetic acid	Corrosive Solid, Acidic, Organic
12 Cupric chloride	Corrosive Solid, Acidic, Organic N.O.S.
13 Boric acid	Corrosive Solid, Acidic, Organic N.O.S.
14 Trichloroacetic acid	Corrosive Solid, Acidic, Organic N.O.S.
15 Potassium hydroxide	Corrosive Solid, Basic, Inorganic N.O.S.
16 Sodium hydroxide	Corrosive Solid, Basic, Inorganic N.O.S.
17 Piperazine	Corrosive Solid, Basic, Organic
18 Diethanolamine	Corrosive Solid, Basic, Organic N.O.S.
19 Hexamethylene tetramine	Corrosive Solid, Basic, Organic N.O.S.
20 Bismuth	Corrosive Solid, Water-Reactive N.O.S.
21 Phenylhydrazine	Corrosive, Combustible Liquid
22 Phosphorus oxychloride	Corrosive, Water-Reactive
23 Phosphorus pentachloride	Corrosive, Water-Reactive
24 Acetic anhydride	Corrosive, Water-Reactive, Flammable
25 Isopropanol Solution	Flammable Liquid
26 n-Propanol	Flammable Liquid
27 Ethyl acetate	Flammable Liquid
28 Triethylamine	Flammable Liquid, Corrosive
29 Dibutyl ether	Flammable Liquid, Explosive Peroxides
30 Tetrahydrofuran	Flammable Liquid, Explosive Peroxides
31 Diisopropyl ether	Flammable Liquids, N.O.S.
32 Isopropyl ether	Flammable Liquids, N.O.S.
33 Pyridine	Flammable Liquids, N.O.S.
34 Alcohol	Flammable Liquids, N.O.S.
35 Dioxane	Flammable Liquids, N.O.S.
36 Candle oil, epoxy resin	Flammable Liquids, N.O.S.
37 Epoxy resin	Flammable Liquids, N.O.S.

38 Vinyl chloride	Flammable Liquids, N.O.S.
39 Lighter fluid	Flammable Liquids, N.O.S.
40 Paint thinner	Flammable Liquids, N.O.S.
41 Coleman lantern fuel	Flammable Liquids, N.O.S.
42 Toluene	Flammable Liquids, N.O.S.
43 Xylene	Flammable Liquids, N.O.S.
44 Benzene	Flammable Liquids, N.O.S.
45 Methyl ethyl ketone	Flammable Liquids, N.O.S.
46 Acetone	Flammable Liquids, N.O.S.
47 Nitromethane	Flammable Liquids, N.O.S.
48 Sodium	Flammable Solid, Corrosive, Water-Reactive
49 Calcium hydride	Flammable Solid, Corrosive, Water-Reactive
50 Potassium metal alloy	Flammable Solid, Explosive, Water-Reactive
51 Red phosphorus	Flammable Solid, Inorganic N.O.S.
52 Phenolphthalein	Hazardous Waste Solid
53 Copper sulfate	Hazardous Waste Solid, N.O.S.
54 Antimony	Hazardous Waste Solid, N.O.S.
55 Aluminum	Hazardous Waste Solid, N.O.S.
56 Lead pipe	Hazardous Waste Solid, N.O.S.
57 Sodium chloride	Irritant
58 Stannous chloride	Irritant, Harmful If Swallowed
59 Formamide	Irritant, May Cause Reproductive and Fetal Effects
60 Tetrachloroethylene	Irritant, Suspect Cancer Hazard
61 Hydrogen nitrite	Oxidizing Liquids, N.O.S.
62 Silver nitrate	Oxidizing Liquids, N.O.S.
63 Hydrogen peroxide	Oxidizing Liquids, N.O.S.
64 Manganese dioxide	Oxidizing Solid, N.O.S.
65 Sodium nitrite	Oxidizing Solid, N.O.S.
66 Ethyl bromide	Poison
67 Mercuric nitrate	Poison
68 Bromine	Poison Inhalation Hazard Zone A
69 Mercuric chloride	Poison, Birth Defect Hazard
70 Mercury	Poison, Corrosive
71 Perchloric acid	Poison, Corrosive, Flammable Liquid
72 Sodium azide	Poison, Fire and/or Explosion Hazard
73 Chloroform	Poison, Suspect Cancer Hazard
74 Thionyl chloride	Poison, Water-Reactive, Corrosive
75 Sodium methoxide	Self-Heating Solids, Inorganic N.O.S.
76 Sodium dithionate	Self-Heating Solids, inorganic N.O.S.
77 Potassium dichromate	Strong Oxidizer, Corrosive
78 Potassium nitrate	Strong Oxidizer, Fire Hazard
79 Potassium perchlorate	Strong Oxidizer, Fire Hazard
80 Caffeine	Toxic Solid, Inorganic, N.O.S.
81 Bismuth	Toxic Solid, Inorganic, N.O.S.
82 3-indolebutyric acid	Waste Corrosive Liquid, Acidic, Organic, N.O.S.
83 3-indoleacetic acid	Waste Corrosive Liquid, Acidic, Organic, N.O.S.
84 Malic acid	Waste Corrosive Solid, Acidic, N.O.S.
85 Tin chloride	Waste Corrosive Solid, Acidic, N.O.S.
86 Triethanolamine	Waste Corrosive Solid, Basic, Organic N.O.S.

87 Diethylamine	Waste Corrosive Solid, Basic, Organic N.O.S.
88 Sodium sulfite	Waste Oxidizer Solid, N.O.S.
89 Deuterium oxide	Waste Toxic Liquids, Inorganic N.O.S.
90 Chloroform	Waste Toxic Liquids, Organic N.O.S.
91 Indole	Waste Toxic Liquids, Organic N.O.S.
92 Sodium sulfide	Waste Toxic Solid, Inorganic N.O.S.
93 Antimony sulfide	Waste Toxic Solid, Inorganic N.O.S.
94 Calcium chloride	Waste Toxic Solid, Inorganic N.O.S.
95 Magnesium sulfate	Waste Toxic Solid, Inorganic N.O.S.
96 Disodium phthalate	Waste Toxic Solid, Organic N.O.S.
97 Barium carbonate	Waste Toxic Solid, Organic N.O.S.
98 Magnesium metal	Waste Water-Reactive Solid, N.O.S.
99 Calcium carbide	Waste Water-Reactive Solid, N.O.S.
100 Zinc	Waste Water-Reactive Solid, N.O.S.
101 Calcium hydride	Waste Water-Reactive Solid, N.O.S.
102 Lithium	Water-Reactive Solid, Oxidizer N.O.S.

* *N.O.S.* = *not otherwise specified.*

Information Sources:

1. Hazardous Waste Disposal Contractor's Uniform Hazardous Waste Manifest Proper Shipping Name and Hazard Class for all those items marked "N.O.S." or "Poison Inhalation Hazard Zone A,"
2. The Waukesha County Department of Parks and Land Use, Environmental Health Division staff reviewed online databases of Material Safety Data Sheet information to determine all other shipping name and hazard class listings. This is not an exhaustive list of all the health effects for each chemical.

Appendix II

Abatement Plan for Concord Apartments, Menomonee Falls, Wisconsin

The following are mitigation actions needed for the entire building and unit 208 to be determined by the Waukesha County Department of Health and Human Services and the Wisconsin Department of Health and Family Services to be safe for re-entry and reoccupancy.

1. The property owner will ensure that law enforcement will remove from the rental unit all guns, ammunition and ammunition components, and fireworks.
2. In each room and closet of unit 208, the property owner will:
 - Remove and dispose all loose items.
 - Remove, dispose, and replace all internal doors.
 - Remove, dispose, and replace walls, ceilings, or wooden trim (baseboard, door, or window) that are permanently stained (stain not removed by washing).
 - For walls without staining, double trisodium phosphate (TSP) wash all walls (For double TSP wash, wash with a fresh TSP solution, rinse with clean water, then repeat).
 - For ceilings without staining, double TSP wash all ceilings.
 - After washing or replacement, paint all walls and ceilings with an oil-based primer and a final interior top coat.
 - For wooden trim that is not stained, double TSP wash all trim in each room. After trim has dried, seal with an oil-based polyurethane varnish.
 - Remove and dispose all carpeting and padding, as well as all linoleum flooring. Stained carpeting, padding and flooring should be cut out and placed in a double plastic bag before disposal.
 - Double TSP wet-mop subflooring that is not stained.
 - Remove and dispose all stained subflooring. Stained subflooring materials should be placed in a double plastic bag before disposal. If staining exists on materials beneath the subflooring, these materials should also be removed. Contact Waukesha and Wisconsin health agencies for further guidance.
 - Remove and dispose all window coverings.
 - Remove and dispose all light fixtures, including the ceiling fan.
 - Remove and dispose all wall hangings (e.g., mirrors, paintings)
 - Remove and either dispose or double TSP wash wall fixture plates (e.g., light switch plates, outlet plates, thermostats, doorbell/speaker plate).
 - Have a certified plumber inspect and determine whether plumbing is damaged and should be repaired/replaced.
 - In the water heater closet, remove and double TSP wash the water heater, then return after surfaces inside the closet have been mitigated, as described above.
3. In the living room, the property owner will:
 - Remove and dispose the air conditioning unit.

- Remove and dispose the wall heating unit.
 - After glass has been replaced in the window, double TSP wash non-glass surfaces/screens and wash glass surfaces with an ammonia solution.
4. In the bedroom, the property owner will:
- Thoroughly clean the wall heating unit.
 - After glass has been replaced in the window, double TSP wash non-glass surfaces/screens and wash glass surfaces with an ammonia solution.
5. Bathroom, the property owner will:
- Either dispose of or rigorously clean the bathtub and toilet.
 - Remove and dispose the vanity cabinet, sink, and fixtures.
 - Remove and dispose the wall heating unit.
 - Remove and dispose the ceiling fan. Double TSP wash inside the fan duct-work as far can be reasonably reached.
 - Remove and dispose wall medicine cabinet.
6. In the kitchen, the property owner will:
- Remove and dispose all appliances.
 - Remove and dispose all counters, the sink, and fixtures.
 - Remove and dispose all floor and wall cabinets.
7. In the restricted hallway near units 207, 208, 209, and 210, the property owner will:
- (Until this area has been properly cleaned), restrict access via second floor hallway, near laundry room, by installing a temporary wall made of studs and plastic sheeting. Temporarily lock laundry room. Also, restrict access to first floor front door stairway and foyer by installing a temporary wall made of studs and plastic sheeting.
 - Before cleaning and painting of hallway walls, collect one (1) wipe sample from hallway wall on either side of unit 208, for a total of two wipe samples. Each wipe sample will be collected from between 3 to 5 inches above the floor, and approximately 6 to 12 inches from the 208 door frame. Wall wipe samples will be collected from either a 12-by-12 inch or 10-by-10 centimeter area. Wipe samples will be submitted for laboratory analysis for methamphetamine. Results will be reported immediately to both Waukesha and Wisconsin health departments.
 - Double TSP wash all hallway walls and ceilings.
 - Steam shampoo all carpeting.
 - After washing, paint all walls and ceilings with an oil-based primer and a final interior top coat.
8. In all other hallways, the property owner will:
- Double TSP wash all hallway walls and ceilings.
 - Steam shampoo all carpeting.

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Appendix III

Wisconsin Department of Health and Family Services' Clean-up Guidelines for Methamphetamine Laboratories

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Cleaning Up Hazardous Chemicals at Methamphetamine Laboratories

Human health hazards can remain after the seizure of a clandestine methamphetamine laboratory. Local health departments, under Wisconsin State Statute 254, are responsible for dealing with human health hazards. This fact sheet summarizes current Wisconsin Department of Health and Family Services recommendations for the cleanup of chemical residues at former meth lab sites. Contact the Department for further assistance when dealing with high production meth labs. For more information on how to recognize a meth lab, contact the Narcotics Bureau of the Wisconsin Division of Criminal Investigations.

What is methamphetamine?

Methamphetamine, an illegal substance also known as “meth,” “speed,” “crank,” “crystal,” and “ice”, is a potent synthetic drug that is a stimulant of the central nervous system. The effects of meth are similar to those of cocaine. It gives the user a “rush” or intense feeling of pleasure that lasts longer than cocaine. Meth is an increasingly popular drug that can be injected, snorted, taken orally, or smoked. Long-term use leads to physical dependence. Meth may give a person periods of high energy and rapid speech. Many chronic meth users also experience severe depression, delusions, hallucinations, paranoia, and violent behavior.

For this reason, you should never enter an active meth lab. Contact your local law enforcement immediately.

Meth is often made in makeshift laboratories, such as rented apartments or hotel rooms. During the production of meth, a property can become contaminated with hazardous chemicals.

What chemicals is meth made from?

There are many different chemical "recipes" for making or “cooking” meth. Each uses different

ingredients. Many chemicals used in meth labs are also common in homes. However, the poor handling and disposal of these chemicals, as well as mixing incompatible compounds, can create hazards. Some examples of common household chemicals used in a meth lab include flammable, volatile solvents, such as methanol, ether, benzene, methylene chloride, trichloroethane, and toluene. Other common household chemicals include muriatic acid, sodium hydroxide, table salt, and ammonia.

Meth-related chemicals not commonly found in large amounts in homes include anhydrous ammonia, red phosphorous, iodine, reactive metals, and other solvents not listed above. Additionally, other hazardous chemicals can be formed during the “cooking” process.

As a result of meth “cooking”, many chemicals may contaminate a property. Some household materials, such as carpeting, wallboard, ceiling tile, or fabric, may actually absorb spilled chemicals. Furniture or draperies may also become contaminated. Soil or groundwater (including nearby drinking water wells) may become contaminated if chemicals are dumped in a septic system or on the ground.

What happens after a meth lab is discovered?

When a meth lab is discovered, the local law enforcement agency and/or the Division of Criminal Investigations, is responsible for making arrests and seizing the lab. Evidence is removed from the site, and chemical hazard consultants are brought in by law enforcement to remove containers of hazardous chemicals related to the operation of the meth lab. Officials will also screen indoor air. Law enforcement may call child protective services if children are involved.

Once the main sources of chemicals related to the former lab have been removed, the health department is called in to evaluate the property for long-term exposure risks from residual chemicals. Additionally, the Department of Natural Resources may be called in to assess any environmental impacts from chemical spills or improper waste disposal.

Next steps for local health departments called in after a lab seizure

Before entering a former meth lab, call the local law enforcement agency and/or Division of Criminal Investigations to get information on the seizure. Ask about: the amounts and types of chemicals used in the meth production; whether there was evidence of solvent use, chemical spills, or unusual odors; where the production was occurring; whether it was a low or high production lab^{*}; and the general level of sanitation existing on the property.

When visiting a site for the first time, have a member of local law enforcement or the Division of Criminal Investigations familiar with the site accompany you.

Will exposure to chemicals in a meth lab result in harmful health effects?

While still in operation, or prior to a seizure, there is a high risk for acute exposure to harmful chemicals in meth labs. If you discover an **active** meth lab, do not attempt to enter. Contact your local law enforcement agency immediately.

Many of the chemicals used in the “cooking” process can be harmful. Short-term exposures to high concentrations of chemical vapors that may exist in a functioning meth lab can cause severe health problems or even death. For this reason, meth “cookers”, their families, and first responders are at highest risk of acute health effects from chemical exposure, including lung damage and chemical burns to different parts of the body. Heating solvents inside a building can create a highly flammable situation; meth labs are often discovered when fire fighters respond to a blaze.

After a bust and seizure of a meth lab there is often only a low exposure risk to chemical residues, but this contamination needs to be cleaned up. However, properties often have serious sanitation and safety issues (i.e., physical and electrical hazards may exist). Sanitation issues can complicate the assessment

of chemical hazard risk. Any evaluation needs to consider the overall condition of the property.

Chemical residues and lab wastes that are left behind at a former meth lab can also result in health problems for people who use the property. Unsuspecting people can touch residues of meth and have symptoms similar to those experienced by meth users. For this reason, local health departments should thoroughly assess the property for hazards prior to allowing it to be re-inhabited, especially by children.

When a meth lab is discovered in a multiple-unit dwelling, neighbors may be concerned about their exposure to hazardous chemicals while the lab was still active. While neighbors’ risk for exposure is usually very low both before and after a meth lab bust, it is important to address any nearby residents’ concerns.

What kind of protective equipment can prevent chemical exposure?

At a minimum, all people entering a former meth lab before law enforcement/Division of Criminal Investigations led cleanup and removal of chemicals should wear protective eye, hand and foot covering. Disposable gloves (e.g. latex or nitrile) and a disposable protective jumpsuit (e.g. Tyvek) are recommended. If toxic fumes or vapors are suspected, only trained professionals should enter and clean the building with appropriate safety equipment.

How can a meth lab be cleaned up?

Since illegal drug labs are an emerging problem, there are currently no official regulations on exactly how to clean up former meth labs, particularly inside of a building. Situations are different in each meth lab. The Department has worked with other agencies to provide the following meth lab clean up procedures that will protect the public and be practical for property owners.

Sometimes scrubbing and painting is all that is necessary to restore a former meth lab to a safe living environment. Sometimes, contamination is so broad and extensive that the inside of the building needs complete renovation. Across the

^{*} Always contact the Department of Health and Family Services for more assistance before proceeding in cases of high production labs.

U.S., the response to cleaning up former meth lab properties ranges from minor cleaning to complete demolition of buildings. Some meth labs require soil and/or groundwater cleanup as well, depending on the extent of how and where chemical wastes were managed.

Property owners are responsible for proper clean up and costs. Owners who decide to clean buildings on their own should be aware that household building materials and furniture may absorb contaminants and, in some cases, give off fumes. Private cleanup contractors can be hired to conduct building cleanup as well.

Is sampling needed at former labs?

There is currently no national or state consensus on sampling at former meth lab buildings. The Department currently recommends that sampling is usually not needed. A qualitative approach to clean up, including visual assessment and walk-through, is just as effective at identifying risk.

If chemicals have been dumped or spilled in the environment (on the ground, in a septic system, etc.), the Department of Natural Resources will assess the need for environmental sampling, and has specific guidelines to address environmental contamination.

What are acceptable clean up levels for buildings?

There are no pre-determined clean up levels inside a building or home for the many chemicals associated with meth labs. A risk assessment may be necessary to evaluate the potential for exposure on a case-by-case basis.

Until a former meth lab is cleaned, no one should enter the area without foot and hand protection (shoes and gloves) at a minimum. Furthermore, no one should rent, purchase, or occupy the site of the former meth lab until approved cleaning has occurred.

General guidelines for building clean up

- *General sanitation*

Be aware that general sanitation issues often exist at former meth labs. These issues can complicate the site assessment process, and

may include general filth, squalor, and rodent and pest infestations.

- *Air out the building*

After law enforcement officials seize a lab, professionals trained to handle hazardous materials are called in to remove lab waste and any bulk chemicals. During this removal, every effort is made to air out the building for the safety of the removal crew. For security reasons, the building is usually closed upon their departure. The short-term airing-out may not be sufficient to clear the indoor air of solvents that were spilled and remain inside. The building should be aired out for several days before and during cleaning. Exhaust fans can also be set up to circulate the air. During this time, the building should remain off limits unless it is necessary to make short visits to the property.

After the cleaning and airing-out the building, it should be re-checked for staining and odors. If the initial cleaning was not successful, more extensive steps should be taken.

- *Remove and dispose of contamination*

During the meth “cooking” process, splashed and spilled chemicals, supplies and equipment, may have contaminated non-lab items. Remove, double-bag, and properly dispose of any items that are visibly contaminated.

If you find suspicious containers or lab equipment at the property, do not handle them. Leave the area and contact your local law enforcement agency or fire department. It’s possible that some items may have been accidentally left behind by law enforcement. If a hazardous materials clean up team searched the property, the items are probably not dangerous. But, some items may be overlooked in the debris or confusion.

Absorbent materials, such as carpeting, drapes, clothing, furniture, etc., can accumulate dust or splattered chemicals during “cooking.” It is recommended these materials be disposed of if an odor or discoloration is present.

- *Inspect surfaces, remove or clean as needed*

Surfaces, such as walls, counters, floors, and

ceilings, are porous and can hold contamination from the meth “cooking” or preparation process. Clean up is important because of frequent contact with these surfaces, e.g. food preparation, etc.

If a surface has visible contamination, staining, or gives off odors, complete removal and replacement of the surface is recommended. This could include removal and replacement of wallboard, floor coverings and counters.

Appliances where meth was stored or “cooked”, such as refrigerators, kitchen ranges, or ovens, should be disposed of and replaced.

Wear gloves, protective clothing, such as long sleeves, and eye protection while cleaning. Again, ventilation of the building should be continued throughout the cleaning process.

- *Inspect plumbing*

While some of the waste products generated during meth manufacture may be thrown along the sides of roads or in yards, most are dumped down sinks, drains, and toilets. These waste products can collect in drains, traps, and septic tanks and give off fumes.

If a strong chemical odor is coming from household plumbing, do not attempt to address the problem yourself. Contact a plumbing contractor for professional assistance. Let the contractor know that the property is a former meth lab and inform him/her of the types and quantities of chemicals that may have been routinely flushed down the drains. If you suspect the septic tank or yard may be contaminated, contact the local health department.

- *Repaint surfaces*

After a surface has been cleaned, painting that surface should be considered, especially where contamination was found or suspected.

If there is any remaining contamination not removed by cleaning, painting the surface puts a barrier between the contamination and anyone who may come in contact with those surfaces. Painting will cover up and “lock” the contamination onto the surface, reducing the chance of it being released into the air.

Summary steps for building clean up:

1. Contact your local law enforcement agency to determine what chemicals were present at the time of seizure.
2. Have local law enforcement personnel accompany you when visiting the site.
3. Thoroughly ventilate the building before and during clean up.
4. Until a former meth lab is cleaned, do not enter the area without foot and hand protection (shoes and gloves) at a minimum.
5. Remove and dispose of all unnecessary items.
6. Remove visibly contaminated items or items that have an odor.
7. Clean all surfaces using household cleaning methods and proper personal protection.
8. Leave plumbing cleaning to the experts.
9. Air out the building for 3 to 5 days.
10. If odors or staining remain, have the building evaluated by a professional.

Should testing be done after clean up?

Testing can be done after clean up, but at this time the Department of Health and Family Services does not recommend it. The cleaning procedures outlined in this document, when followed correctly, should be adequate for reducing any health hazard risk. If you are dealing with a high production meth lab, call the Department for more assistance. Division of Criminal Investigations will determine if the site was a high production lab.



For more information, contact:

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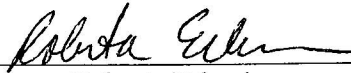
CERTIFICATION

This public health consultation for a Clandestine Drug Lab in Menomonee Falls Apartment was prepared by the Wisconsin Department of Health and Family Services under a cooperative agreement with the Agency for Toxic Substances and Disease Registry (ATSDR). It is in accordance with the approved methodology and the procedures existing at the time the Public Health Consultation was begun.



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The Division of Health Assessment and Consultation, ATSDR, has reviewed this Public Health Consultation and concurs with the findings.



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