Pediatric Considerations - Drug Endangered Children (DEC)

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ACMT / BIA
Meth Lab Working Group

Clandestine Meth Labs
2015
Outline

- Define DEC
- Pediatric Vulnerabilities
- Potential Health Effects
- Medical Evaluation
- Response & Reporting
- Summary
Objectives

- Describe the potential pediatric vulnerability to hazards in meth labs
- Be familiar with the DEC program
- Understand the data surrounding potential consequences of pediatric meth exposure and what effects have actually been shown in humans
- Detail proper decontamination and medical evaluation of children removed from meth labs and drug homes
Drug Endangered Child (DEC)

**Definition:**
- A child under 18 years allowed to be present
  - Where methamphetamine is being sold, offered for sale (or possessed with intent to sell), delivered, distributed, prescribed, administered, dispensed, manufactured, or manufacture is attempted
  - Around drug paraphernalia or toxic or flammable chemicals stored for the purpose of manufacturing or attempted manufacture of methamphetamine
Drug Endangered Child (DEC)

- All states have some legislation that addresses DEC
- Some states mandate the presence of a child is an aggravating circumstance in sentencing
  - Up to 5 years + fine up to $25,000
- Many states now have DEC units/response guidelines

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2015
Montana Legislation

Child abuse or neglect means:

- (B) exposing a child to the criminal distribution of dangerous drugs, as prohibited by 45-9-101, the criminal production or manufacture of dangerous drugs, as prohibited by 45-9-110, or the operation of an unlawful clandestine laboratory, as prohibited by 45-9-132.

- (ii) For the purposes of this subsection (7), "dangerous drugs" means the compounds and substances described as dangerous drugs in Schedules I through IV in Title 50, chapter 32, part 2
Montana Legislation

(3) A person, whether or not the person is supervising the welfare of a child less than 18 years of age, commits the offense of endangering the welfare of children if the person,....

- (a) produces or manufactures methamphetamine or attempts to produce or manufacture methamphetamine;
- (b) possesses any material, compound, mixture, or preparation that contains any combination of the items listed in 45-9-107 with intent to manufacture methamphetamine; or
- (c) causes or permits a child to inhale, be exposed to, have contact with, or ingest methamphetamine or be exposed to or have contact with methamphetamine paraphernalia.
Death of a toddler due to ingestion of sulfuric acid at a clandestine home methamphetamine laboratory

Meredith Burge · John C. Hunsaker III · Gregory J. Davis

Discussion

In general, chemicals can be classified into oxidizers (bleach, peroxide), reducing agents (sulfite compounds), corrosives (sulfuric and hydrochloric acids), desiccants (silica gel), vesicants (nitrogen mustard), and proteolitic poisons (hydrazoic acid) [6]. Acids such as sulfuric acid...
## Children Involved in Methamphetamine Lab-Related Incidents in the United States

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of Meth Lab-Related Incidents</th>
<th>Present</th>
<th>Residing in Seized Meth Labs&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Affected&lt;sup&gt;b&lt;/sup&gt;</th>
<th>Exposed to Toxic Chemicals&lt;sup&gt;c&lt;/sup&gt;</th>
<th>Taken Into Protective Custody</th>
<th>Injured or Killed</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002</td>
<td>15,353</td>
<td>2,077</td>
<td>2,023</td>
<td>3,167</td>
<td>1,373</td>
<td>1,026</td>
<td>26 injured, 2 killed</td>
</tr>
<tr>
<td>2001</td>
<td>13,270</td>
<td>2,191</td>
<td>976</td>
<td>2,191</td>
<td>788</td>
<td>778</td>
<td>14 injured</td>
</tr>
<tr>
<td>2000</td>
<td>8,971</td>
<td>1,803</td>
<td>216</td>
<td>1,803</td>
<td>345</td>
<td>353</td>
<td>12 injured, 3 killed</td>
</tr>
</tbody>
</table>

<sup>a</sup> Children included in this group were not necessarily present at the time of seizure.

<sup>b</sup> Includes children who were residing at the labs but not necessarily present at the time of seizure and children who were visiting the site; data for 2000 and 2001 may not show all children affected.

<sup>c</sup> Includes children who were residing at the labs but not necessarily present at the time of seizure.

Source: El Paso Intelligence Center.
Evidence of Methamphetamine Exposure in Children Removed From Clandestine Methamphetamine Laboratories

Penny Grant, MD,*† Kathy Bell, MS, RN,‡ Deborah Stewart, MD,§
John Paulson, DO, PhD,∥ and Kristen Rogers, PhD§

Objective: To determine whether asymptomatic children removed from clandestine methamphetamine laboratories have evidence of exposure to methamphetamine.

Methods: Retrospective chart review of children removed from law enforcement-certified clandestine methamphetamine laboratories in the Tulsa area of Oklahoma and Sacramento County, California. Exposure was determined by positive urine toxicology for methamphetamine.

Results: One hundred four children were evaluated after removal from clandestine methamphetamine laboratories. Forty-eight children (46%) tested positive for methamphetamine. Timed urine results were known for 68 of 104, with no child testing positive after 6.5 hours from being removed from the laboratory. No child required emergency medical treatment at the time urine samples were obtained.

Conclusions: Almost half of the children in this sample had evidence of exposure to methamphetamine soon after removal from methamphetamine manufacturing environments. Further research is indicated to determine the health effects of subclinical methamphetamine exposure.

Key Words: methamphetamine exposure, health, clandestine laboratories, urine toxicology, abuse

Clandestine Meth Labs

2015
<table>
<thead>
<tr>
<th>Age</th>
<th>n + Tox (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0–11 mo</td>
<td>5 (10%)</td>
</tr>
<tr>
<td>1–2 yr</td>
<td>10 (21%)</td>
</tr>
<tr>
<td>3–4 yr</td>
<td>8 (17%)</td>
</tr>
<tr>
<td>5–8 yr</td>
<td>18 (38%)</td>
</tr>
<tr>
<td>9–16 yr</td>
<td>7 (15%)</td>
</tr>
<tr>
<td>Total</td>
<td>48 (100%)</td>
</tr>
</tbody>
</table>
FIGURE 1. Time duration from removal to urine collection by number of children with positive and negative toxicology screens (n = 68).
Children at Meth Lab Sites: Unsuspected Victims

- Children are victims, not perpetrators, in almost all cases
- Children living at meth lab sites have been exposed to the chemicals in use, if in the same ventilated area
- Extent of exposure varies
Why is it so risky to be a child in a meth lab?
Immediate Health Considerations: Pediatric Vulnerabilities

- Higher minute ventilation: higher toxic dose
- Live closer to the ground
  - Relevance for chemical agents
    - (anhydrous ammonia, phosphine, chlorine)
- Smaller airways
- Less fluid reserve
  - Hemodynamic compromise with onset of pulmonary edema, burns or GI symptoms

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2015
Pediatric Vulnerabilities

- Thinner stratum corneum
  - Increased skin permeability
  - Greater likelihood of chemical burns
- Large surface-to-volume ratio
  - Increased dose after dermal exposure
  - Heat loss (decontamination)
Pediatric Vulnerabilities

- Developmental & psychological:
  - Inability to mobilize
  - Loss of caregiver
  - Care rendered in PPE may frighten child

- Developing neurological and immunological systems:
  - Though the potential for long-term neurotoxic, growth, carcinogenic effects exists, the present data do not demonstrate an increased risk of these effects in children removed from meth labs.
Immediate Health and Safety Needs: Law Enforcement and Protection

- Coordination between DHS, CPS, law enforcement agents (LEA) trained to meet OSHA Hazmat standards and medical resources

- Only appropriately trained LEA should remove children from a meth lab site
  - Booby traps, explosion risks

- CPS is part of the on-scene response
Immediate Health Considerations

- Methamphetamine
  - Ingestion: 18 children in Texas*
  - Symptoms:
    - tachycardia, inconsolable crying and irritability, vomiting
    - confused with scorpion sting

- Route
  - Hand→mouth
  - No evidence of skin absorption

TABLE 1
Chemical components of methamphetamine laboratories and their attendant risks

<table>
<thead>
<tr>
<th>Chemical class</th>
<th>Method of Exposure</th>
<th>Adverse Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ammonia; liquid, anhydrous</td>
<td>Inhalation</td>
<td>Eye, nose, throat irritation, dyspnea, chest pain, pulmonary edema</td>
</tr>
<tr>
<td></td>
<td>Dermal</td>
<td>Skin burns, vesiculation, frostbite</td>
</tr>
<tr>
<td>Acids and bases</td>
<td>Inhalation</td>
<td>Pneumonitis, pulmonary edema</td>
</tr>
<tr>
<td></td>
<td>Topical exposure</td>
<td>Caustic burns</td>
</tr>
<tr>
<td></td>
<td>Ingestion</td>
<td>Gastric perforation, esophageal damage with later strictures, nausea, vomiting</td>
</tr>
<tr>
<td>Solvents</td>
<td>Inhalation and ingestion</td>
<td>Liver and kidney damage, respiratory irritation, CNS effects, aspiration, headache</td>
</tr>
<tr>
<td>Iodine</td>
<td>Inhalation</td>
<td>Respiratory distress, mucus membrane irritation</td>
</tr>
<tr>
<td></td>
<td>Ingestion</td>
<td>Corrosive gastritis</td>
</tr>
<tr>
<td>Phosphorus</td>
<td>Ingestion</td>
<td>Gastrointestinal irritation, liver damage, oliguria</td>
</tr>
<tr>
<td>Red phosphorus</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Potential: phosphine gas</td>
<td>Inhalation</td>
<td>Ocular irritation, nausea, headache, fatal respiratory effects</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
What Health Effects Have Been Reported in Children Removed From Meth Labs?
The Acute Health Consequences to Children Exposed to Hazardous Substances Used in Illicit Meth Production, 1996-2001 (From ATSDR)
Perspective

- Estimated that health of children is endangered at up to 20% of meth labs¥
- HSEES Analysis: 8 known meth events involved 13 pediatric injuries
  - (anhydrous ammonia & acids)§
- In a 2 year period, 472 children taken from clandestine methamphetamine labs in California alone#
- In 2001, 2028 children taken from labs across the US*
- After a decline in early 2000’s, there is an increase in domestic labs since 2008.

¥DEA, 2005.
*DEA EPIC National Clandestine Laboratory Seizure System
What are Some Possible Effects of Toxic Exposure in a Child Removed from a Lab?

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Perinatal Complications From Maternal Meth Use

- Methamphetamine crosses the placenta
- Effects seen in animal studies and in some human case reports:
  - Premature birth, fetal distress
  - Placental hemorrhage/abruption
  - IUGR, ↓head circumference
  - Increased rate of birth defects
    - Cleft palate/lip
    - Cardiac anomalies
- Many co-founding factors make it difficult to draw firm conclusions about the association of maternal methamphetamine use & birth defects
- Is drug testing on first neonatal urine / meconium clinically predictive?

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Neonatal Effects

- First week of life with hyper-irritability
- Poor feeding > Poor weight gain
- Prolonged withdrawal state (weeks-months)
  - First-second week, extreme lethargy
  - Irregular behavioral patterns over several months
- Breast milk transfer of amphetamine complicates matters in mothers who continue to abuse meth

Infant Effects

- 86 methamphetamine infants compared to cocaine exposed
- Less impaired at one year of age than cocaine infants
- Findings lethargy, poor eating and alertness
- Limited developmental assessments: visual-motor coordination impairment
- 59% were placed in foster care

Prenatal Exposure: Long Term Outcome

- Follow up study at 3 and 5 years of age
- 4 cities: (LA, HNL, Des Moines, Tulsa)
- Increased likelihood caregiver continued to use meth, alcohol and MJ
- Children more emotionally anxious or depressed, or withdrawn
- Higher risk ADHD at 5 yo

Peds Effects of Parental Use

- Failure to thrive
- Neglect (minor to severe)
- Developmental delays
- Learning disabilities/ADHD/ODD
- Frequent “accidents”/ER visits
- Predisposition to drug and alcohol abuse

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disproportionate rates of childhood trauma.
- 69.7% had been a witness to domestic violence as a child;
- 66.7% indicated their parents were divorced or separated;
- 56.9% had been emotionally abused as a child;
- 45.4% had been physically abused as a child;
- 42% had been abandoned by one or more parents;
- 33.1% had been sexually abused as a child;
- 30.5% had been sexually abused by a non-relative;
- 11.7% reported being a victim of incest.
When asked where their children were living, participants indicated the following:

- 15.4% of children were in foster care;
- 22.2% of children were with the other parent;
- 31.1% of children were with other relatives;
- 14.4% of children were in “other” living arrangement;
- 16.9% of children were living with MAMTC participants.
Where Do I Begin in My Management of a Child Removed from a Lab?
Child Decontamination

- Recommendations vary widely
  - Risk-based approach is logical
  - Is decontamination always necessary?
- Major issues:
  - Visible contamination
  - Child-friendly, privacy, hypothermia
  - Appropriate decon for the degree of exposure (baby wipes)
- Use discretion when determining what can be removed from the scene
  - Clothing, bedding, toys, baby bottles, food, drink
Refrigerator was full
HIGH RISK SCENARIO

● Definition of a High Risk Situation:
  - Lab entered while drug **cooking** in progress, AND/OR
  - Lab found with evidence of recent **cooking** (e.g. warm vessels or odor present) in an area with shared ventilation (The area in which the child is residing.)

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Moderate and Minor Risk Scenarios

Definition of Moderate Risk Situation:
No cook in progress and no evidence of recent cook, BUT chemicals and cooking apparatus were found in an area where children share ventilation.

Definition of Minor Risk:
- No cook in progress and no evidence of recent cook.
- No chemicals or cook apparatus or evidence of contamination found in an area with shared ventilation with the area in which the children were residing (e.g., children are found in a house without any immediately evident contamination and the house does not share any ventilation [i.e. ducts or doors or windows] with a trailer in which chemicals and cooking vessels were housed.).

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Preliminary Medical Eval: At the Scene

- Look for Signs in the child:
  - Respiratory distress/breathing difficulties
  - Red, watering, burning eye(s)
  - Presence of fire, burns
  - Altered gait (staggering, falling)
  - Slurred speech
  - Abnormal mental state
  - Other symptoms suggesting need for emergency care
Pre-Placement Medical Eval

- Not every child from a lab needs to go to the ED
- Timing of evaluation
  - Based on risk
- In a child who is symptomatic/ high risk scenario
  - Vital signs, oxygen saturation
  - Exam focus on cardio-pulmonary systems and skin
  - ED evaluation early, with urine tox testing.
- Low Risk scenarios: Placement in a medical home with evaluation should be conducted within 72 hours
  - Medical, dental, mental health

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DEC Pilot Project 1997

- 7 county Calif team of CPC, Law Enforcement, MDs, Prosecutors
- At the time none of children tested + for meth
- 56% had inadequate food storage
- 48% found guns at the home
- 45% of children had psychologic disorder DX
- 61% of children ultimately return to parental custody

Drug Testing

- 71% children positive for Meth or pseudo/ephedrine average of 2.45 hours after removal (Oklahoma)
- 30% of children positive (California)
- 66% overall positive (DEA)
- Provides evidence of exposure for criminal prosecution and may also serve in custody determinations
- Uncertain of value to an asymptomatic child
  - NIDA cutoff values generally not used
  - Positive screens not always verified
  - Unclear if there was exposure to a clinically significant amount
Methamphetamine (MET) Single Pack
Rapid-response, single-use urine test. Screens for methamphetamine. **FDA cleared.**

The **Methamphetamine Test** is a one step rapid, qualitative immunoassay for the detection of **d-methamphetamine** in urine. The cutoff concentration for this test is **1000 ng/ml.**

**Standards met:**
- U.S. Department of Defense
- U.S. Laboratory Certification Program.
- Substance Abuse and Mental Health Services Administration (SAMHSA).

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Drug Screen Issues

- Be very careful when interpreting the results of a drug screen or statistics based on drug screening results
- A ‘positive’ drug screen does NOT prove intoxication
- Exposure may have occurred even if a drug screen is negative
- Urine drug screen results cannot be used to estimate exposure time, dose or degree of intoxication
- A drug screen looks for a specific exposure; there are still MANY child health issues in a meth lab home that will not cause a positive drug screen
Reporting: CPS

- With **any** suspicion of a methamphetamine lab (or components) harmful to children
  - LE should be contacted immediately
  - Leave without alarming residents
  - LE must contact CPS immediately if confirmed

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Coordinated Response

- CPS and LE should
  - Identify safety issues for any child(ren)
  
  - Photograph each child and/or scene showing the proximity of the evidence to the child(ren)’s living environment, condition of living environment, injuries, signs of neglect, etc.

  - Goal: illustrate pathways of exposure and neglect

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www.ca.uky.edu/heel/DEC/hiding.jpg
Coordinated Response

- CPS and LE should:
  - Perform limited child-friendly forensic interviews
  - Clarify
    - Primary caretaker
    - Child’s knowledge of the drug manufacturing process
    - Child’s living area if relative to the evidence
    - Medical problems
    - School attendance
    - Other children living in the home who were not present at the time of the seizure
  - Share information with team
  - Follow up interview at ~48 hours

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Transfer of Child

- Only symptomatic children need to be seen in the ED
  - Asymptomatic children should be evaluated in an appropriate medical home within 72 hours
- CPS notifies medical facility and escorts child
- CPS provides medical personnel with list of chemicals found at site
- Stays with child at hospital
- Once medically stable, CPS will take child to central office, child advocacy center or emergency shelter pending placement

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Children at Meth Labs

- Does the children pose a real chemical danger to the foster setting?
- How heavily contaminated is the child?
- Can effective decon be performed by simple bathing?
Examination of the Child

- The child should be examined by a physician when there is reason to believe the child is a victim of serious physical or sexual abuse, has been removed from a methamphetamine lab or there is reason to believe the child may have drugs in their system due to actions by the parent.

- If child is removed from a meth lab, Child Protection Specialist should follow the statewide protocol for medical evaluation of children found in drug labs.
# Protocol for Children Found in Drug Labs

**Montana Department of Public Health and Human Services – Child & Family Services Social Worker**

<table>
<thead>
<tr>
<th>Immediately</th>
<th>Within 24 Hours</th>
<th>Within 48 Hours</th>
<th>Follow-Up</th>
</tr>
</thead>
<tbody>
<tr>
<td>Respond to law enforcement referral for Child Protective Services (CPS)</td>
<td>Coordinate with law enforcement to determine if there are other children in the family who were not present at the time of the initial incident and locate their whereabouts</td>
<td>File an abuse and neglect petition through the court system within two working days of placement of children</td>
<td>Ensure that children are seen for follow-up medical examinations as recommended by physician (additional medical testing may be necessary once toxicology results are received)</td>
</tr>
<tr>
<td>Arrive at the scene but WILL NOT enter a contaminated environment (protective gear required)</td>
<td>Follow the same decontamination process guidelines for the other children who were located and the home where they stayed</td>
<td>Ensure children receive developmental assessments within 30 days</td>
<td></td>
</tr>
<tr>
<td>Receive children delivered by law enforcement after decontamination has occurred and protective suits put on children (use children clothing packets from law enforcement or social worker). Absolutely NO clothing, toys, blankets, food, drink or other items may be taken from the scene due to contamination.</td>
<td>Transport other children to local hospital ER or Children’s Advocacy Center. Law enforcement will accompany children and CPS worker. Present ER physician or Children’s Advocacy Center with medical protocol kit. Law enforcement is responsible to pick up specimens from hospital ER or Children’s Advocacy Center (follow medical protocol).</td>
<td>Provide mental health referrals as appropriate or recommended</td>
<td></td>
</tr>
<tr>
<td>Transport children immediately to local hospital ER or Children’s Advocacy Center for medical evaluation. Law enforcement will accompany children and CPS worker. Present ER physician or Children’s Advocacy Center with medical protocol kit. Law enforcement is responsible to pick up specimens from hospital ER or Children’s Advocacy Center (follow medical protocol).</td>
<td>Place children in a safe setting. If children are potentially to be placed with unlicensed kin home, conduct a CPS check and sexual and violent offender registry check prior to placement. Follow-up with fingerprints and motor vehicle check within three days. Request law enforcement to conduct a statewide law enforcement background check of the relative home. Provide caregiver with completed CFS 205.</td>
<td></td>
<td></td>
</tr>
</tbody>
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**Clandestine Meth Labs**

2015
# Protocol for Children Endangered by Nature of Exposure to Drugs

**Montana Department of Public Health and Human Services – Child & Family Services Social Worker Will:**

<table>
<thead>
<tr>
<th>Immediately And/or Within 24 Hours</th>
<th>Within 48 Hours</th>
<th>Follow-Up</th>
</tr>
</thead>
<tbody>
<tr>
<td>Respond to Law enforcement referral for Child Protective Services</td>
<td>If required to protect the safety of the child, file the appropriate petition within two working days of placement. If the child is not placed, it may be necessary to file a petition for Temporary Investigative Authority or to provide voluntary protective services.</td>
<td>Ensure that children are seen for follow-up medical examination as recommended by physician (additional medical testing may be necessary once toxicology results are received). Ensure EPSDT screens/services are identified.</td>
</tr>
<tr>
<td>Coordinate initial home visit with law enforcement. Investigate potential neglect/abuse of children. Determine if other children in the family are not present during the home visit and locate their whereabouts. Continue investigation and interviews.</td>
<td>Follow-up with fingerprints and motor vehicle check within three days.</td>
<td>Follow medical protocol</td>
</tr>
<tr>
<td>Ensure children are evaluated by primary care provider or Children’s Advocacy Center (follow medical protocol). Provide primary care provider with medical protocol kit. Law enforcement is responsible to pick up specimens from the primary care provider. (Follow steps outlined in medical protocol).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Law enforcement alters CFS worker if urinalysis tests positive for drugs. CPPS takes necessary steps to ensure safety of children. If children are removed, provide written notification to parents/guardians.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>If necessary, place children in a safe setting and provide parents or guardian with written notification regarding investigation or placement. If children are potentially to be placed in unlicensed home, conduct a CPS check and sexual and violent offender registry check prior to placement. Request law enforcement to conduct a statewide law enforcement background check of the relative home. Provide caregiver with completed CFS 206.</td>
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**Clandestine Meth Labs**

2015
Summary

- Children are frequently found at meth lab sites
- They are at risk for acute toxic exposure to precursor chemicals and injury from fire/explosion
- They are at high risk for neglect or abuse
- A sensitive, coordinated, risk-based response is needed
- Further research on the long term impact of pre- and postnatal methamphetamine exposure is needed
Questions?

68% of Montana teens who have tried meth say they first used it when they were age 15 or younger.

What's in meth?
- Alcohol
- Ether
- Benzene
- Gasoline additives
- Paint thinner
- Acetone
- Toluene
- Freon
- Chloroform
- Red Devil lye
- Camp stove fuel
- Anhydrous ammonia
- Phenyl-2-propane
- White gasoline
- Phenylpropanolamine
- Drain cleaner
- Lithium from batteries
- Iodine
- Red phosphorous
- Ephedrine
- Diet aids
- Bronchodilators
- Phenylacetone
- Battery acid
- Sodium metal
- Muratic acid
- Cold tablets
- Iodine crystals

Doubt it? Click here.

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Photo: Meth Free Montana