

Toxic Brew of Chemicals Cooked Up in Meth Labs

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DENVER — People "cooking" methamphetamine in thousands of clandestine laboratories across the nation produce a toxic cloud of hydrochloric acid, phosphine, iodine, and methamphetamine that spreads through the entire house or apartment, according to researchers at National Jewish Medical and Research Center. The findings help identify and quantify the health hazard clandestine methamphetamine laboratories pose to adults and children living in the labs, and to health and law enforcement personnel entering them.

"We were surprised by the large amount of hydrochloric acid and methamphetamine vaporized during the cook," said John Martyny, PhD, Associate Professor of Medicine at National Jewish. "The chemicals spread throughout the house. The methamphetamine is deposited everywhere, from walls and carpets to microwaves, tabletops and clothing. Children living in those labs might as well be taking the drug directly."

Martyny presented his findings Monday to [U.S. Senator Ben Nighthorse Campbell](#) (R-Colo), [Karen Tandy](#), Administrator of the U.S. Drug Enforcement Administration (DEA), and law enforcement and health officials from throughout the Denver metro region. Senator Campbell helped secure initial funding for the project.

"This has been an extraordinary and successful collaborative effort," said Senator Campbell. "I want to continue providing federal support for this important work."

Illegal methamphetamine use has skyrocketed in recent years in the Denver metro area and around the country. Because methamphetamine is relatively easy to manufacture, users produce it at thousands of home labs across the country. In Colorado alone, busts of methamphetamine laboratories rose from 51 in 1998 to 450 in 2002.

Occupants of the labs, including children, who are found in about 30% of them, are exposed to a variety of toxic chemicals. Law enforcement personnel have reported illnesses they attribute to repeated exposures during methamphetamine laboratory investigations.

Prior to this study, however, no one really knew exactly what kind of exposures people faced in the laboratories, nor how these chemicals accumulated in household building materials.

Martyny and his colleagues at the North Metro Drug Task Force, [Tri-County Health Department](#), the [National Institutes of Occupational Safety and Health](#) (NIOSH), and the [U.S. Drug Enforcement Administration](#) gathered data about the exposures in three controlled "cooks" of methamphetamine in a scientific laboratory, a house, and a motel room, and at 15 suspected clandestine methamphetamine laboratories.

They found that levels of iodine, phosphine, and hydrochloric acid are likely to exceed current occupational standards during a cook using the red phosphorous method. Hydrochloric acid levels were especially high during the final "acidification stage," often exceeding the NIOSH "Immediately Dangerous to Life and Health" level. Large amounts of methamphetamine are also released into the air and deposited on most items and on horizontal and vertical surfaces throughout the building. Cooking can release as much as 5,500 micrograms of methamphetamine per cubic meter into the air, and deposit as much as 16,000 micrograms per 100 square centimeters onto surfaces.

"These are biologically significant levels of methamphetamine, especially for small children who explore their environment by crawling and putting things in their mouths," said Martyny. "One of the disturbing unknowns, however, is what the long- and short-term effects of these exposures are. We plan to study that in the near future."

The findings will help law enforcement personnel plan for adequate protection during the investigation of clandestine methamphetamine laboratories. It enables these individuals to minimize their exposures and, in the event that they are exposed, to know what chemicals were likely involved. They will also help medical personnel administer proper care in case of acute or chronic exposure to these clandestine laboratories and set up effective long-term medical

surveillance for law enforcement personnel who are repeatedly exposed to toxic chemicals in clandestine methamphetamine laboratories.

"Today's study exposes the enormous, but hidden, risks of methamphetamine," said Ms. Tandy. "The high levels of toxins dispersed during meth manufacturing expose innocent and unwary citizens to poisons that can be silent killers."

Initial funding for the project was provided through the Division of Criminal Justice at Colorado Department of Public Safety. Additional funding has been provided by the National Institute of Occupational Safety and Health and HealthONE Alliance.

[\(Full Report. pdf -- 1.73MB \)](#)

Additional Methamphetamine Research Reports

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