Information Bulletin
Title: Terrorist Chemical Device (UPDATE)
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This is a joint DHS and FBI Bulletin.

Based on this notification, no change to the Homeland Security Advisory System (HSAS) level is anticipated; the current HSAS level is YELLOW-ELEVATED.

DHS and FBI encourage recipients of this Bulletin to report information concerning suspicious or criminal activity to the local FBI Joint Terrorism Task Force (JTTF) – the FBI regional phone numbers can be found online at http://www.fbi.gov/contact/fo/fo.htm – and the Homeland Security Operations Center (HSOC). The HSOC can be reached via telephone at 202-282-8101 or by email at HSCenter@dhs.gov. For information affecting the private sector and critical infrastructure, contact the National Infrastructure Coordinating Center (NICC), a sub-element of the HSOC. The NICC can be reached via telephone at 202-282-9201 or via email at NICC@dhs.gov. When available, each report submitted should include the date, time, location, type of activity, number of people and type of equipment used for the activity, the name of the submitting company or organization and a designated point of contact (POC).

ATTENTION: Federal Departments and Agencies, State Homeland Security Advisors, Security Managers, State and local law enforcement, and Information Sharing and Analysis Centers

OVERVIEW

Department of Homeland Security (DHS) and Federal Bureau of Investigation (FBI) Information Bulletins are informational in nature and are designed to provide updates on the training, tactics, or strategies of terrorists. The following information is meant to advise federal agencies and law enforcement officers of the possible threat from one type of improvised chemical device. While DHS and the FBI possess no information indicating specific targeting of the U.S. infrastructure, such targeting would be consistent with al-Qaida's stated objective to disrupt and undermine vital economic interests in this country.

This report is an update of a DHS article previously published on September 16, 2003, and FBI Intelligence Bulletin no. 57, issued on March 26, 2003. This update is being issued to ensure security and law enforcement officers are familiar with crude chemical devices of interest to terrorists. Reasons for this interest include the relative ease with which some of these materials can be obtained, the potential for casualties and psychological impact on a population, and disruption at the scene of the event and to related infrastructure. Due to the sensitivity of the material and our concern that this information not get into the hands of groups with malicious intent, all recipients must ensure proper handling of this document and ensure that it not be released publicly or to personnel who do not have valid need-to-know.

DETAILS

Terrorists have designed chemical dispersal devices fabricated from commonly available materials which are designed to asphyxiate victims. The device, in its simplest form, produces hydrogen cyanide (HCN) gas; however, it can be modified to produce both HCN and cyanogen chloride (ClCN) gas. Little or no training is required to assemble and deploy such a device, due to its simplicity.

This improvised chemical device (see Figure 1) consists of a pierced container or canister, such as a large milk container or paint can. The holes would presumably allow the toxic gas to escape. The acidic materials are likely to be in glass bottles or vials. The bottom of the container, around the bottles, would be partially filled with a crystalline solid. If cyanide salts are used, the color will be white or yellow. A slightly modified device would also use potassium permanganate ($KMnO_4$) crystals, which are purple. The device can be used with or without a detonator. A detonator, or other means, is used to break the inner container(s), releasing the acid and allowing the chemicals to mix, creating a gas.

The device could be placed near air intakes or ventilation systems, in crowded open spaces, or in enclosed spaces. It is most effective in enclosed spaces. In most cases, use of a ventilation system for dispersal would sufficiently dilute the gas from one or several smaller versions of these devices; therefore, mass fatalities would be unlikely to occur. HCN and ClCN have a relatively low toxicity; therefore, a large concentration of either gas is needed to produce lethality. However, lower concentrations are potentially fatal to the vulnerable, such as children, the elderly, and people already in respiratory distress. The gas readily dissipates and would need to be generated quickly in order to deliver lethal levels of gas. In most cases, HCN and ClCN would not be effective in large open areas with good ventilation.

Security personnel should be aware of the variety of symptoms related to the chemical substances described below. In any case where chemicals or a suspected chemical device is encountered in an investigation with a potential terrorism nexus, security personnel should contact the appropriate law enforcement/safety personnel in their jurisdiction.

COMPONENTS OF POSSIBLE TERRORIST CHEMICAL DEVICE

Figure 1

The chemical device consists of a container or canister, such as a large milk container or paint can (1). Some of the materials are likely to be in glass bottles or vials (2). The bottom of the container, around the bottles, would be partially filled with white/yellow crystals (3). A more sophisticated device would also use purple crystals (4). The device could be used with or without a detonator (5).

The device might be positioned near air intakes or a ventilation system.

- The cyanogen chloride will be irritating to lungs and eyes before it reaches a lethal concentration, and it emits a dense smoke. Both effects could slow evacuation and cause panic-related injuries.
- It is likely that all reactants will not be totally consumed at first, and the device may reactivate when disturbed, which could severely impair emergency responders.

Description:

Various transportation systems may be vulnerable to attack using these improvised chemical devices, particularly where security screening procedures are minimal. One or more assembled devices could easily be brought aboard a train or subway. These gases would also be effective when released in confined spaces of buildings or other indoor facilities. It is difficult to judge the number of casualties that would result from the use of multiple devices; however, such an attack will likely generate fear and panic among the local population.

An airplane is a more difficult location for terrorists to penetrate with a chemical device. However, most if not all of the components could be easily disguised as ordinary household items and mixed in-flight to produce toxic gases. For example, an acid solution, such as hydrochloric acid (HCl), might be stored in plastic or glass containers, such as thermoses, soda bottles, liquor bottles, and juice or baby bottles. It could not be stored in most metal containers

due to its corrosive nature. HCl used in such a device would be colorless or slightly yellow—appearing like water or a commercially available beverage. However, a noxious odor is easily detectable once the container is opened. Solid powder components could be smuggled aboard using the same concealment techniques as those used for drugs or explosives. These concealment techniques may include, but are not limited to:

- Electronic equipment.
- Clothing.
- Luggage and briefcases.
- Books.
- Children's toys.
- Medication, toiletries, and containers of consumable products.
- Casts or bandages on broken or injured limbs, prosthetic devices, wheelchairs, and walkers.
- Religious objects.

These materials could be brought onto an airplane in carry-on baggage. Multiple individuals could bring separate components aboard and assemble the device during flight in a lavatory.

Cyanide is one of the main chemical poisons in which terrorist groups have shown an interest, both because of its ease of dissemination and its availability. Cyanide salts, such as sodium cyanide (NaCN) or potassium cyanide (KCN), may be combined with a strong acid, HCl, to form a binary (two-part) chemical device. A simple mixing of the two components generates HCN gas, which can cause dozens of casualties if used at high concentrations in an enclosed area.

- NaCN and KCN are white to pale yellow salts.
- HCN is a colorless liquid that boils near room temperature.

A slightly modified device may also incorporate $KMnO_4$ along with the cyanide salt and HCl. The $KMnO_4$ converts the chloride ion (Cl^-) to chlorine (Cl_2) which, in turn, converts some of the cyanide gas to ClCN, a blood agent similar to HCN but also a highly effective irritant to the eyes and lungs.

- $KMnO_4$ is a deep purple solid.
- ClCN is a colorless to pale yellow liquid, which boils below room temperature.

Note that other strong acids, such as sulfuric acid H_2SO_4, can be used to react with cyanide salts to produce HCN gas; however, an acid with a (Cl^-), such as HCl, is needed to produce ClCN gas.

Indicators of an Attack:

According to the Center for Disease Control (CDC), HCN is sometimes described as having a "bitter almond" smell, but it does not always give off an odor, and not everyone can detect this odor. Responders should not rely on odor detection alone to determine whether a dangerous concentration of HCN is present. ClCN has an acrid, choking odor and causes burning pain in the victim's eyes below lethal concentrations. These warning properties may make it possible to evacuate or ventilate the attack site before the agent reaches a lethal concentration.

HCN produced by the reaction of cyanide salts and acid generates a white cloud around the device generating the gas. Both HCN and ClCN need to be at high concentration to be effective, so evacuating or ventilating the target area will significantly reduce the agent's lethal potential.

Cyanide compounds disrupt cells' ability to utilize oxygen, leading to suffocation. Exposure to high concentrations of cyanide may produce nausea, vomiting, palpitations, confusion, hyperventilation, anxiety, and vertigo, which may progress to agitation, stupor, coma, and death. These symptoms will appear first in the most susceptible: the elderly, children, and the infirm.

Medical countermeasures for cyanide poisoning include: high doses of oxygen, inhalation of amyl nitrite while a solution of sodium nitrate/sodium thiosulfate is prepared for intravenous use, and hyperbaric oxygenation if the victim does not respond to initial treatments. Prompt treatment is of the utmost importance.

SUGGESTED PROTECTIVE MEASURES

Terrorists continue to select soft targets for attack--particularly those that will yield a high casualty count. There are two categories of soft targets that a terrorist may choose for attack, those being soft targets with controlled access and soft targets with uncontrolled access. Examples of soft targets with controlled access include sports stadiums, arenas, and office buildings (with security guards). Examples of soft targets with uncontrolled access include hospitals, malls, restaurants, and schools without elaborate security procedures. All available antiterrorism measures, to include physical security perimeters, personnel awareness, and reporting mechanisms, should be rigorously reexamined. The following are the recommended general protective measures that apply to both categories and specific protective measures recommended for soft targets with controlled access:

General Protective Measures for Controlled and Uncontrolled Access:

- Encourage personnel to take notice of and report unattended packages, devices, briefcases, or other unusual materials immediately; inform them not to handle or attempt to move any such object, especially near air intakes.
- Encourage personnel to know emergency exits and stairwells and the locations of rally points to ensure the safe egress of people present.
- Increase the number of visible security personnel wherever possible.
- Institute/increase vehicle, foot, and roving security patrols varying in size, timing, and routes.
- Enclosed spaces, such as restrooms, should be regularly inspected.

- Deliveries to concessions in stadiums, arenas, and conference centers should be inspected prior to scheduled events.
- Implement random security guard shift changes.
- Limit the number of access points and strictly enforce access control procedures.
- Deploy visible security cameras and motion sensors.
- Arrange for law enforcement vehicles to be parked randomly near entrances and exits.
- Review current contingency plans and, if not already in place, develop and implement procedures for receiving and acting on threat information, alert notification procedures, terrorist incident response procedures, evacuation procedures, bomb threat procedures, hostage and barricade procedures, chemical, biological, radiological and nuclear (CBRN) procedures, consequence and crisis management procedures, accountability procedures, and media procedures.
- Conduct internal training exercises and invite local emergency responders (fire, rescue, medical, and bomb squads) to participate in joint exercises.

Additional Specific Protective Measures for Soft Targets with Controlled Access:

- Inspect vendor items being brought into soft target areas prior to event.
- Inspect all items being carried in by patrons accessing soft target areas.
- Ensure proper badging and identification of all staff working the event.
- Conduct security sweep of soft target area prior to event.

Information on suspicious activities potentially related to terrorism should be forwarded immediately to the local FBI JTTF and the DHS HSOC as indicated on the first page.

For comments or questions related to the content or dissemination of this Information Bulletin, please contact the DHS/Information Analysis and Infrastructure Protection Directorate's Requirements Division at DHS.IAIP@DHS.GOV.