

The Saline County Criminal Justice Training Center



Chemical Suicides

First Responder Safety



Course Objectives:

Upon completion of this training, attendees will be able to:

1. Define the hazardous nature of responding to a chemical suicide call.
2. List the steps in safely responding to a call involving chemical suicide.

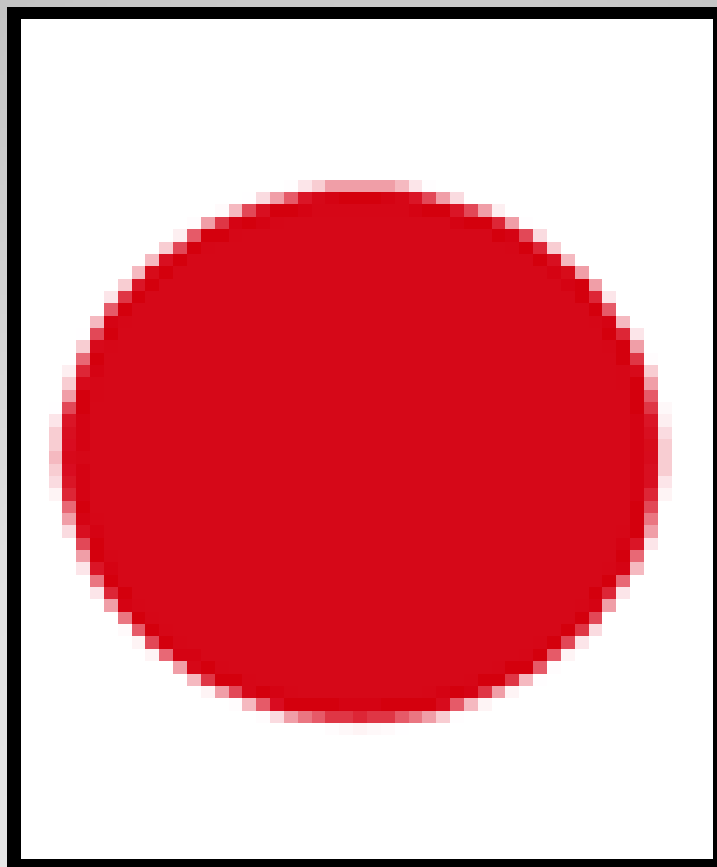
Objective #1

Define the hazardous nature of responding to a chemical suicide call.

Chemical suicides reported in Japan

- So called “Detergent suicides” have been a recent trend in Japan, which has caused a panic amongst officials.
- With 50 people having killed themselves with detergent overdose recipes found on the internet, officials have tried to get internet providers to take down pages containing the recipe.

Chemical suicide examples from Japan



Japanese Girl Commits Suicide With Detergent

April 24, 2008 (AP)

- A 14-year-old Japanese girl killed herself in her bathroom by mixing laundry detergent with liquid cleanser, releasing fumes that sickened 90 people in her apartment house.
- The door was closed, and she had affixed a sign on the outside warning, "Gas being emitted."
- None of the sickened neighbors in Konan, southern Japan, were severely ill, although about 10 were hospitalized.
- The deadly hydrogen sulfide gas escaped from the girl's bathroom window and entered neighboring apartments.
- The girl's suicide was part of an expanding string of similar deaths that experts say have been encouraged by Internet suicide sites since last summer.



Police officers in protective gear enter the apartment where a Japanese girl gassed herself to death by mixing laundry detergent with cleanser.

Japan

- A 31-year-old man outside Tokyo killed himself inside a car by mixing detergent and bath salts.
- A local police spokesman refused to give further details, but Kyodo News agency reported the man put a sign reading "Stay Away" on the car window.

Japan

- At a business hotel in Shiga prefecture in western Japan, a man in his 30's was found dead by employees who noticed a strange smell coming from his room, according to national broadcaster NHK.
- Shiga police said officials are investigating the incident as a case of suicide by hydrogen sulfide gas but could not elaborate.

Japan

- Reports of another similar death emerged when the body of a 42-year-old woman in Nagoya, central Japan, was found in a bathtub.
- According to Kyodo, there was toilet cleaner and bath powder nearby, along with a sign outside that read, "Poisonous gas being emitted. Caution."
- Nagoya police said they could not comment on the case, but Kyodo said that fire officials called to the scene did not detect hydrogen sulfide gas.
- The method has alarmed officials because of the danger that bystanders can be hurt.

Japan

- In Japan, a total of 32,155 people killed themselves in 2006, giving the country the ninth highest suicide rate in the world, according to the government.
- "It's easy and everyone can do it," said Yasuaki Shimizu, director of Lifelink, a Tokyo-based group specializing in halting suicides.
- "Also there is a lot of information teaching people how to do it on the Internet."
- Police say they have not tallied the number of detergent-related suicides, but media reports suggest it has reached about 30 this year, including several cases in which others were also sickened.

A warning to fire and emergency services responders

- The New York Office of Fire Prevention and Control recently assisted local authorities in two communities with suicides involving chemicals.
- This method of suicide, sometimes called “detergent suicide,” frequently used in Japan, is being seen more frequently in the U.S.
- The process involves mixing common household chemicals to create hydrogen sulfide in a small space.
- Instructions to do this are readily available on the internet and most encourage anyone planning to use this method to provide appropriate warnings to people who might encounter or respond to their situation about the presence of the deadly gas.

(November, 2009)

Examples of chemical suicides

- In Arizona one individual manufactured hydrogen cyanide instead of hydrogen sulfide.
- It may be rare because chemicals needed for the reaction are not as readily available as those used to make hydrogen sulfide.

Be alert for warning signs

- Anyone who enters the space without proper protection may quickly become a victim.
- Both recent incidents in New York involved suicides inside a vehicle.
- One vehicle had very clear and obvious warning signs taped to the window (as shown in Fig. 1 and 2), the other had less noticeable signs laid on the dashboard.
- In both instances responders recognized the situation and took protective actions.



Figure 1

Hydrogen Sulfide
gas, or (H_2S)
inside. Extremely
Toxic. Need
Hazardous Materials
crew before
opening.

Figure 2



Chemical suicide - Sugar Creek

Dec. 22, 2009

SUGAR CREEK, Mo. – A man used hydrogen cyanide chemicals to kill himself in a confined pickup truck.

- Four responders and a family member were exposed to the toxic gases from inside the vehicle.
- All five were just taken to the hospital as a precaution.
- No warning note was found on the truck.
- The man worked in a lab and had access to cyanide.
- Two containers were found in the truck (shown in Fig. 3).



Figure 3

Incidents may become more frequent

- It is anticipated that the number of these incidents will rise as more people become aware of the process.
- The New York Office of Fire Prevention and Control developed the following guidelines to deal with these incidents.

Objective #2

List steps in safely responding to a call involving chemical suicides.

Responding to chemical suicides

- Responders should be aware that these situations commonly occur in vehicles, residential bathrooms and other small spaces where a small amount of gas can quickly reach lethal concentrations.
- Dispatchers and call takers should warn callers not to approach, or enter, vehicles, rooms or apartments where unresponsive people may have attempted chemical suicide.

Responding to chemical suicides

- Dispatchers and call takers should be alert for this type of call.
- The caller may say there are warning signs on the vehicle but may not volunteer this information.
- Warning signs may be removed, become detached or dislodged, or blow away before emergency personnel arrive.
- The caller may not say anything about a strange smell (like rotten eggs or almonds) unless prompted when they call 911.
- Proper initial questioning may yield information vital to the safety of the first responders.
- The information must be immediately passed on to the first responders by the 911 personnel.

Responding to chemical suicides

- Carefully size up any situation involving an unresponsive person in an enclosed space.
- Responders should wear SCBA and turn-out gear whenever they are dealing with a suspected chemical suicide.

Responding to chemical suicides

- Consider wind speed and direction when determining the need to evacuate nearby structures.
- In an apartment building, consideration should be given to evacuating the entire building.

Responding to chemical suicides

- If there's a possibility the victim is sleeping, attempt to wake them with a vehicle public address system, bullhorn or siren.
- If they cannot be awakened, responders should perform a thorough recon before entering the space to assist the victim.

Responding to chemical suicides

- Individuals who initiate chemical suicide may, or may not, place warning signs on doors or windows to indicate the presence of deadly gas inside the space.
- Signs may not be easily detected or understood by other people – including responders!
- Signs may be hidden or obscured by condensation, frost, snow, or vapors produced by the reaction.

Responding to chemical suicides

- Interview anyone who may have approached the scene to learn what they saw or smelled.
- A “rotten egg” smell would indicate hydrogen sulfide.
- An almond odor is typical of cyanide compounds.

Responding to chemical suicides

- Look for indications a chemical reaction has been initiated.
- Typically you will find containers of household chemicals and pails, buckets, pots or other containers where the chemicals have been mixed.
- Improvised “containers”, such as a sink or the glove box of an automobile, could be used to mix the chemicals.

Responding to chemical suicides

- If you can clearly see there are no chemical containers and mixing containers present anywhere in the space, it is probably not a chemical suicide.

Responding to chemical suicides

- If chemical containers are present, attempt to identify the chemicals from labels or a sales receipt.
- The reaction utilizes an acid, such as muriatic or hydrochloric found in many common cleaning compounds, and a sulfide present in many fungicides, paints, insecticides, and shampoo to produce Hydrogen Sulfide.

Responding to chemical suicides

- The presence of containers of potassium cyanide, or cyanide compounds would indicate a reaction that produces hydrogen cyanide.
- This is less common than the hydrogen sulfide reaction as the cyanides are not as easily obtained.

Responding to chemical suicides

- Air sampling equipment can be used to determine the presence or absence of hydrogen sulfide or hydrogen cyanide.
- A small hole may be punched in a car or home window, or a probe, or colorimetric tube inserted in the gap between a door to the room and the floor.
- A hydrocyanic acid tube will detect hydrogen cyanide.
- Hydrogen sulfide is heavier than air, but hydrogen cyanide is slightly lighter.

Responding to chemical suicides

- If the vapor in the space cannot be identified, or the presence of hydrogen cyanide is confirmed entry should only be made by individuals protected by fully encapsulated chemical protective clothing (level A).
- Hydrogen cyanide is immediately dangerous to life and health at concentrations above 50 parts per million.

Responding to chemical suicides

- Both hydrogen sulfide and hydrogen cyanide are flammable.
- The Lower Explosive Level of hydrogen sulfide is 4% and the LEL of hydrogen cyanide is 5.6%.
- There have been no incidents of fire reported with these incidents.
- It is believed that concentrations do not typically reach the LEL except at close proximity to the mixing container.
- Responders should eliminate ignition sources whenever possible.

Responding to chemical suicides

- Vapors inside the space should be ventilated to the outside.
- Ensure no one will be endangered by the vapors before using natural or forced ventilation to air the space out.
- Anyone who has been exposed to the vapors should be decontaminated with soap and water.

Responding to chemical suicides

- Clothing should be removed and double-bagged.
- Contaminated clothing and PPE should be laundered before being re-used.
- If alive, the victim should be stripped and decontaminated with soap and water before being transported from the scene.
- Deceased victims should be covered by a sheet.
- Body bags are not recommended.

Chemical suicide hazards in emergency rooms

Man's Vomit Poisons 54 People

By Mui Mui on May 22, 2008

- In Kumamoto, Japan, a man was rushed to the emergency room after poisoning himself by drinking large amounts of pesticide.
- Doctors were attempting to pump the patient's stomach when he started violently vomiting before dying.
- The spray of chloropicrin, a very dangerous pesticide, was so toxic it cause 54 doctors, nurses, and patients to have breathing problems and sores in their eyes, leaving them desperate for medical help.
- All of the injured hospital workers were transferred to a different hospital and 10 of them ended up being hospitalized themselves.
- A 72 year-old pneumonia patient got the worst of it as her condition worsened after being exposed to the fumes.
- 90 additional hospital personnel were called in to assist in the emergency and the nearby fire department was called in to decontaminate the emergency room.

Source: [Weird Asian News.com](http://WeirdAsianNews.com)

Other Chemicals:

**Paradichlorobenzene
poisoning**



Paradichlorobenzene poisoning

- Some vacuum cleaners have an attachment for killing bugs.
- The attachment holds moth crystals (Paradichlorobenzene, pronounced "para-di-chloro-benzene")
- This attachment will convert your vacuum sweeper to exterminate insects (spiders, roaches, ants, etc.).
- Anything that can walk or crawl.

What do the instructions say?

One vacuum instruction book says:

How to use the crystalator:

- Warning: Follow directions and cautions on label of crystal container.
- Keep crystals out of reach of children.
- Crystals may be harmful if taken internally.
- Do not breathe the concentrated gas from the crystalator.
- Do not enter a treated closet until it has ventilated.
- Do not remain in a treated room until gas concentration is reduced to safe level.
- If eye, throat, or skin irritation occurs, do not remain in treated area.
- Return unused crystals to closed container and seal tight. In the crystalator, use only 100% pure paradichlorobenzene with U.S.D.A. registration number on the container.

Paradichlorobenzene poisoning

- Paradichlorobenzene is a white, solid chemical with a very strong odor.
- Poisoning can occur if you swallow this chemical or inhale it in a gaseous form.
- Where Found - Toilet bowl deodorizers and Moth repellent. (not all-inclusive).

Paradichlorobenzene poisoning

Symptoms:

- Burning in mouth
- Breathing problems (rapid, slow, or painful)
- Cough
- Shallow breathing
- Changes in alertness
- Headache
- Slurred speech
- Weakness
- Yellow skin (jaundice)
- Abdominal pain
- Diarrhea
- Nausea
- Vomiting

Paradichlorobenzene poisoning

Emergency Room Care

- The health care provider will measure and monitor the patient's vital signs, including temperature, pulse, breathing rate, and blood pressure.

Symptoms will be treated as appropriate. The patient may receive:

- Activated charcoal
- Fluids through a vein (by IV)
- Laxative
- Medicines to treat symptoms
- Tube through the mouth into the stomach to wash out the stomach (gastric lavage)

Paradichlorobenzene poisoning

Outlook (Prognosis)

- This type of poisoning is usually not life threatening. Little will likely happen if your child accidentally puts a moth ball in the mouth, even if swallowed, unless it causes choking.
- Mothballs have an irritating smell, which usually keeps people away from them.
- More severe symptoms may occur if someone intentionally swallows the product, since larger amounts are usually swallowed or fumes inhaled.

Could a person use this to kill their self?

- I think so, don't you?
- It certainly sounds like it could be harmful.
- First responders should take the same precautions discussed earlier if they are at a scene where someone has been the victim of this type of poison, whether accidental or not.

Time for Questions



Acknowledgement

The initial information for this presentation was provided by The New York State Office of Fire Prevention & Control, Hazardous Materials/Homeland Security Bureau.

<http://www.dos.state.ny.us/fire/firewww.html>

November 6, 2009

And, to Les Kerr, Law Enforcement Coordinator for the U.S. Attorney, Western District of Missouri for sharing the information with me and others.

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MEMORANDUM

TO: All Fire and Emergency Services Responders

FROM: Ron Dunn

DATE: November 6, 2009

SUBJECT: Chemical Suicides

The Office of Fire Prevention and Control has recently assisted local authorities in two communities with suicides involving chemicals. This method of suicide, sometimes called detergent suicide, is frequently used in Japan and is being seen more frequently in this country. The process involves mixing common household chemicals to create hydrogen sulfide in a small space. Instructions to do this are readily available on the internet and most encourage anyone planning to use this method to provide appropriate warnings to people who might encounter or respond to their situation about the presence of the deadly gas. One incident in Japan took place in the bathroom of an apartment. Over seventy people in neighboring apartments were sickened by the fumes. In Arizona one individual manufactured hydrogen cyanide instead of hydrogen sulfide. This is the only instance of hydrogen cyanide I've been able to discover and suspect it's rare because the chemicals needed for the reaction are not as readily available as those used to make hydrogen sulfide.

Our concern is that anyone who enters the space without proper protection may quickly become a victim themselves. Both recent incidents in New York involved suicides inside a vehicle. One vehicle had very clear and obvious warning signs taped to the window (as in Fig. 1 and 2), the other had signs that were less noticeable laid on the dashboard. In both instances responders were able to recognize the situation and take appropriate protective actions.

It is anticipated that the number of these incidents will rise as more people become aware of the process. The Office of Fire Prevention and Control has developed guidelines to deal with these incidents that I believe local responders will find useful in the event of a chemical suicide in their community.

The attached information is intended to serve as a model protocol. Local agencies may choose to alter these, or implement different policies, based on local training, resources and policies. The important point is that we should be prepared to respond safely to events of this nature. Please distribute this information to the responders in your community.



Fig. 1

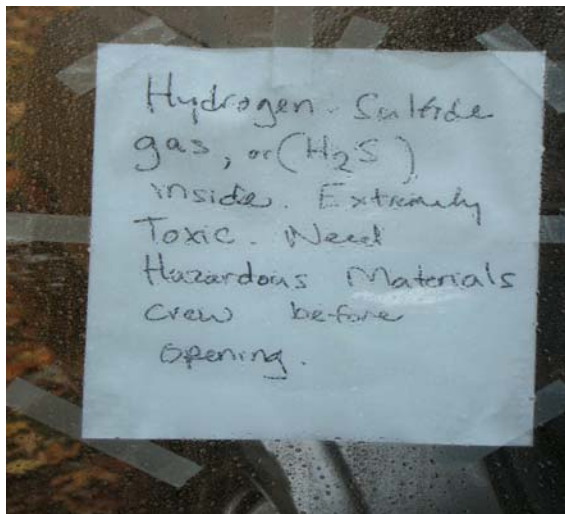


Fig. 2



Fig. 3 (chemical containers and pail used for mixing)

Responding to Chemical Suicides

Responders should be aware that these situations commonly occur in vehicles, residential bathrooms and other small spaces where a small amount of gas can quickly reach lethal concentrations. Dispatchers and call takers should warn callers not to approach, or enter, vehicles, rooms or apartments where unresponsive people may have attempted chemical suicide.

Careful size up of any situation involving an unresponsive person in an enclosed space is critical for responder safety. Responders should wear SCBA and turn out gear whenever they are dealing with a suspected chemical suicide.

Consider wind speed and direction when determining the need to evacuate nearby structures. In an apartment building consideration should be given to evacuating the entire building.

If there is a possibility that the individual may be sleeping, attempt to wake them with a vehicle public address system, bullhorns or sirens.

If individuals cannot be awakened responders should perform a thorough recon before entering the space to assist the victim.

Individuals who initiate chemical suicide may, or may not, place warning signs on doors or windows to indicate the presence of deadly gas inside the space.

Signs may not be easily detected, or understood, by other people – including responders!

Signs may be hidden or obscured by condensation, frost, snow or vapors produced by the reaction.

Interview anyone who may have approached the scene to learn what they saw or smelled. A “rotten egg” smell would indicate hydrogen sulfide; an almond odor is typical of cyanide compounds.

Look for indications that a chemical reaction has been initiated. Typically you will find containers of household chemicals and pails, buckets, pots or other containers where the chemicals have been mixed. There is a possibility that improvised “containers”, such as a sink or the glove box of an automobile, could be used to mix the chemicals.

If you can clearly see that there are no chemical containers and mixing containers present anywhere in the space it is probably not a chemical suicide.

If chemical containers are present attempt to identify the chemicals from labels on the containers, or a sales receipt. The reaction utilizes an acid, such as muriatic or hydrochloric which is found in many common cleaning compounds and a sulfide that would be present in many fungicides, paints, insecticides and shampoo to produce Hydrogen Sulfide.

The presence of containers of potassium cyanide, or cyanide compounds would indicate a reaction that produces hydrogen cyanide. This is less common than the hydrogen sulfide reaction as the cyanides are not as easily obtained.

Air sampling equipment can be used to determine the presence, or absence of hydrogen sulfide or hydrogen cyanide. A small hole may be punched in a car or home window, or a probe, or colorimetric tube inserted in the gap between a door to the room and the floor. A hydrocyanic acid tube will detect hydrogen cyanide. Hydrogen sulfide is heavier than air ($VD = 1.19$), but hydrogen cyanide is slightly lighter ($VD = 0.94$)

If the vapor in the space cannot be identified, or the presence of hydrogen cyanide is confirmed entry should only be made by individuals protected by fully encapsulated chemical protective clothing (level A). Hydrogen cyanide is Immediately Dangerous to Life and Health at concentrations above 50 parts per million.

Both hydrogen sulfide and hydrogen cyanide are flammable. The Lower Explosive Level (LEL) of hydrogen sulfide is 4% (40,000 ppm) and the LEL of hydrogen cyanide is 5.6% (56,000 ppm). There have been no incidents of fire reported with these incidents and it is believed that concentrations do not typically reach the LEL except at close proximity to the mixing container. Responders should eliminate ignition sources when ever possible.

The vapors inside the space should be ventilated to the outside. Ensure that no one will be endangered by the vapors before using natural or forced ventilation to air the space out.

Anyone who has been exposed to the vapors should be decontaminated with soap and water. Clothing should be removed and double bagged. Contaminated clothing and PPE should be laundered before being re-used. The victim should be stripped and decontaminated with soap and water before being transported from the scene. Deceased victims should be covered by a sheet, body bags are not recommended.

Expenses related to the clean up may be reimbursed through the State Super Fund or the Environmental Protection Agency. New York State Environmental Conservation employees can assist with this, contact DEC early in the incident. DEC can hire contractors to carry out the clean up; they can not reimburse local responders for their costs associated with incidents.



CHEMICAL SUICIDE ON CAMPUS

BY BC RONALD DUNN AND DC JAKE ORESHAN;
NEW YORK STATE OFFICE OF FIRE PREVENTION AND CONTROL
HAZARDOUS MATERIALS/HOMELAND SECURITY BUREAU

Police at Indiana University recently discovered the body of a young student, in the closet of a third floor room at the Willkie Residence Hall. University staff discovered the door to the room barricaded, and a sign on the closet door reading "Warning H₂S" when they were checking on the welfare of the student, who had not been seen in several days. Police were called and they found the body in the closet. The student had mixed chemicals in a bucket to create deadly hydrogen sulfide gas.

This disturbing twist in suicides that campus safety personnel must be aware of is sweeping the nation. Suicide by inhalation of toxic gases is becoming more popular with young people and the method poses a threat to others including public safety people. Intelligence reports indicate a great deal of chatter on blogs indicating an increasing number of college level students that are feeling very pressured. This apparently is especially related to chemistry students. Pressure from advisors, professors, and the individuals themselves has been cited. There is concern of suicide events increasing in the near future due to these pressures.

The method of suicide employed in Indiana was first used in Japan and has come to be called "Detergent Suicide", or "Chemical Suicide." The process involves mixing two readily available products together to create hydrogen sulfide gas. When confined in a small space it doesn't take very much of the reactant chemicals to produce a deadly concentration of hydrogen sulfide.

Twenty nine people chose this method of suicide in Japan during 2007. By 2008 over five hundred Japanese ended their lives this way, and in 2009 eight hundred ninety seven. In the United States we are aware of only two chemical suicides in 2008 and nine in 2009. There have been over a dozen in this country during 2010 and it is suspected that many others have gone unreported. Most of the victims have been males in their teens or early twenties. The first case in New York State was the suicide of a young man who had recently dropped out of a central NY college.

The victims find instructions for this process on the internet. Victims learn that they should use a small room, like a bathroom, an automobile, or similar small space with little air exchange. Some sites recommend taping sheets of plastic over windows and doors of bathrooms to prevent the gases from moving from the intended space. An incident from Japan illustrates what can happen when this method is used. A detergent suicide in an apartment building in Japan sickened over ninety neighbors of the victim; ten of those people were hospitalized. Several incidents involving chemical suicides in vehicles have resulted in police or other emergency responders being sickened and hospitalized. Most web sites suggest that signs to warn people of the deadly gas be made and placed on doors and windows to prevent others from being harmed by entering the space without proper protection. Signs used will typically say "Danger Deadly Hydrogen Sulfide Gas Do Not Open" or "Deadly Hydrogen Sulfide Gas Inside, extremely toxic. Need Hazardous Materials crew before opening". The signs are not always present, and can be obscured by fumes, condensation or other conditions when they are present.

The gas is a very effective killer and has the potential to harm other people nearby or potential rescuers. Safety professionals must be alert for this possibility and act quickly to protect themselves and others if they suspect a chemical suicide. With the exception of one person who used the wrong ingredients, there are no instances of unsuccessful suicides by people using this technique. Chances of rescuing the perpetrator are extremely small.

When dealing with unresponsive individuals in enclosed spaces attempt to rouse them without entering the space. Shout loudly, use horns, sirens, or public address systems from a distance. If you are outside, stay upwind from the incident. In any event if you notice any unusual odors back off immediately and call for assistance from agencies equipped and trained to work in hazardous atmospheres. Hydrogen sulfide will quickly fatigue your sense of smell, even at low concentrations. If you smell something and the odor goes away it may be only because your sense of smell is no longer working.

To protect other individuals, move them out of harms way. An initial isolation zone of 100 feet should be established around vehicles. No unprotected people should be allowed within the isolation zone. In apartments or dormitories adjacent living spaces, including floors above, and below, should be evacuated quickly and air handling systems should be shut down. Interview other people in the building to determine if they have noticed any unusual odors. Evacuate further if conditions warrant. Depending on the construction of the building and other circumstances it may be advisable to evacuate the entire building until a thorough investigation proves it to be safe to occupy.

Hydrogen sulfide is considered Immediately Dangerous to Life and Health (IDLH) at concentrations of 100 parts per million (PPM) or higher. The National Institute of Safety and Health (NIOSH) recommends that workplace exposures to hydrogen sulfide not exceed 10 PPM at any time. Hydrogen sulfide is also flammable at concentrations in air between 4 and 44 percent. It is not believed that flammable concentrations will be encountered in these situations, but it is wise to use meters to detect the gas and measure the concentration.

The concentration of hydrogen sulfide created will vary with the reactants involved, the quantity used, and the ability of fresh air to enter the space. There is no data to indicate a typical concentration that might be encountered. Suffice it to say that everyone who has mixed the correct chemicals has been found dead. Do not take any unusual risks, protect yourself and others.

It's imperative that campus staff and safety personnel be aware of the threat to their personal safety posed by this type of suicide. Agencies with the proper protective equipment and training should be summoned to assist with these events.

For additional information contact Chief Dunn at Ronald.dunn@dos.state.ny.us or Deputy Chief Oreshan at Jake.oreshan@dos.state.ny.us 518-474-6746.



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**FIREFIGHTER SAFETY &
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**COLORADO STATE FIRE
CHIEFS' ASSOCIATION**

Responder Safety: Hydrogen Sulfide Gas (H₂S) Suicides on the Rise

Responders Who Fail to Take Proper Precautions Can Quickly Become Victims Themselves

Last week the CSFCA distributed responder safety information from the Wake County (NC) EMS Divisionⁱ concerning a 30-year-old Cary, NC man who committed suicide with hydrogen sulfide by mixing chemicals in a 5-gallon bucket inside his Toyota Camry. On February 21st, fire and EMS personnel were dispatched to a report of an unconscious party in a car. Upon arrival, the man was found slumped over the wheel of his car in his apartment complex parking lot but he had left warning signs on the dashboard and seats that read, “HAZMAT TEAM NEEDED” and “DO NOT OPEN!!! POISON GAS!!! Hydrogen sulfide.”

When Hazmat arrived they donned Level B PPE and SCBA and opened the door to the vehicle – the monitors showed 340 ppm of Hydrogen Sulfide (H₂S) – more than three times the lethal concentration (the IDLH of H₂S is 100 ppm).

Since distributing that information, it has become abundantly clear that this method of suicide, sometimes called detergent suicide, is being seen with increasing frequency in the United States. The process involves mixing common household chemicals to create hydrogen sulfide gas in a small space. Instructions to do this are readily available on the internet and most encourage anyone planning to use this method to provide appropriate warnings to people who might encounter or respond to their situation about the presence of the deadly gas.

***Responders Who Fail
to Take Proper
Precautions Can
Quickly Become
Victims Themselves***

So deadly is hydrogen sulfide that it is considered a major occupational safety hazard for workers in municipal sewage services, industrial manure management on factory farms, and the growing aquaculture industry – the US National Oceanographic and Atmospheric Administration (NOAA) provides detailed background and training videos.ⁱⁱ

Now we can add first responders to the list of those at risk.

- On February 14, 2010, a St. Petersburg police officer was hospitalized after responding to a suicide where a man released a deadly gas in his car. The officer was overcome by the fumes and had trouble breathing. He was taken to a nearby hospital and later released.ⁱⁱⁱ
- On December 22, 2009 in Sugar Creek, Missouri four first responders were transported to the hospital after being exposed to the toxic chemicals a man used to kill himself in a confined pickup truck.^{iv}

First responders who fail to take proper precautions can quickly become victims themselves.

Hydrogen sulfide is a highly toxic and flammable gas - explosive between 4% and 45% (concentration in air). Being heavier than air, it tends to accumulate at the bottom of poorly ventilated spaces. Although very pungent at first, it quickly deadens the sense of smell, so potential victims may be unaware of its presence until it is too late.^v

Toxicity

Hydrogen sulfide is considered a broad-spectrum poison, meaning that it can poison several different systems in the body, although the nervous system is most affected. The toxicity of H₂S is comparable with that of hydrogen cyanide. It forms a complex bond with iron in the mitochondrial cytochrome enzymes, thereby blocking oxygen from binding and stopping cellular respiration.^{vi}

- 0.0047 ppm is the recognition threshold, the concentration at which 50% of humans can detect the characteristic odor of hydrogen sulfide, normally described as resembling "a rotten egg".
- Less than 10 ppm has an exposure limit of 8 hours per day.
- 10–20 ppm is the borderline concentration for eye irritation.
- 50–100 ppm leads to eye damage.
- At 150–250 ppm the olfactory nerve is paralyzed after a few inhalations, and the sense of smell disappears, often together with awareness of danger,
- 320–530 ppm leads to pulmonary edema with the possibility of death.
- 530–1000 ppm causes strong stimulation of the central nervous system and rapid breathing, leading to loss of breathing;
- 800 ppm is the lethal concentration for 50% of humans for 5 minutes exposure (LC50).
- Concentrations over 1000 ppm cause immediate collapse with loss of breathing, even after inhalation of a single breath.

Chemical Suicides in the News

Following are news reports of chemical suicides that were found through an internet search. While it appears the predominant method is hydrogen sulfide gas, at least two of these incidents involved other chemicals (sodium cyanide and hydrogen cyanide).

March 1, 2010 (Bethlehem, PA) – A man's body found in a car in Bethlehem prompted a hazardous materials response when officials said his death was linked to inhaling chemicals. The victim, a 40 year

old man from Hanover Township, committed suicide by inhaling toxic chemicals, the Northampton County Coroner said. Police said the victim parked his car in a lot posted signs stating he was committing suicide and what types of chemicals were mixed together.^{vii}

February 26, 2010 (Castaic, CA) -- A woman whose body was found inside a car in a remote area near Castaic was likely the victim of hydrogen sulphide gas poisoning, commonly known as "detergent suicide," investigators say. The woman's body was found slumped in the back seat of a blue Honda Civic by a pair of L.A. County Sheriff's Deputies while on a routine patrol. The windows of the vehicle were covered with stickers that read 'Stay Away,' "Dangerous Gas," and "Don't Open," according to a L.A. County Sheriff's spokesman.^{viii}

February 22, 2010 (Clarksville, IN) - Firefighters responded on a reported unconscious, unresponsive victim at a local motel that turned out to be a suicide by Hydrogen Sulfide. The hydrogen sulfide was created by the combination of common household cleaning products. The victim had sent letters to family members in advance of the suicide and had posted a hazmat warning sign on the motel room door. While no emergency responders were injured on this run, it's important to understand that several could have been very easily killed or seriously injured had they not seen the warning signs.^{ix}

February 21, 2010 (Cary, NC) – Police and firefighters spent hours dealing with a very unusual suicide. It happened on Cary Reserve Drive around 11 a.m. Police found a car with signs all over it warning of a dangerous chemical inside. A hazardous materials team from Raleigh was called in to help, and the car was carefully opened. Inside, emergency workers found the body of a 31-year-old Cary man who apparently mixed some household chemicals together in order to take his own life.^x

February 14, 2010 (St. Petersburg, FL) - A St. Petersburg police officer was hospitalized after responding to a suicide where a man released a deadly gas in his car. Police say a 23-year-old man called his girlfriend and told her he was going to kill himself. He reportedly told his girlfriend he learned how to make the gas on the Internet. The girlfriend called police, and officers responded to his home. They found the car with its windows up and signs on the outside warning of poisonous gas. The officer was overcome by the fumes and had trouble breathing. He was taken to a nearby hospital and later released. Police determined that the gas was made by mixing two household chemicals.^{xi}

February 11, 2010 (Grand Junction, CO) – A 33-year-old woman whose body was found inside a parked car on Orchard Mesa committed suicide, according to the Mesa County Coroner's Office. Grand Junction police received a report that a person was inside the car and not moving. Police called out the Grand Junction Fire Department's hazardous materials team which found **sodium cyanide** held in a container in a powder form, inside the woman's vehicle. A note had been posted on a window in the car, warning others about the deadly chemical.^{xii}

February 6, 2010 (Siesta Key, FL) – For the second time in about two months, a person has parked a car at Siesta Key Beach, placed a warning note in the window and then committed suicide by exposure to a fatal mix of chemicals inside the car. Residents of a nearby apartment building were evacuated as authorities prepared to open the car and release the chemical contents, a Sarasota Sheriff's spokesperson said.^{xiii}

January 9, 2010 (Bloomfield, CT) – Sunday night or early Monday, a middle-aged woman parked her car in a secluded spot in Bloomfield, affixed signs to a window warning of poison gas, then breathed in hydrogen sulfide gas produced by a cocktail of common household chemicals in what appears to be Connecticut's first instance of "chemical suicide."^{xiv}

December 22, 2009 (Sugar Creek, MO) – Four first responders on a suicide call went to the hospital after being exposed to the toxic chemicals a man used to kill himself. The man used what is called detergent suicide, using **hydrogen cyanide** in a confined pickup truck. The chemical released toxic gases, which the four responders and a family member were exposed to. All five were just taken to the hospital as a precaution.^{xv}

December 7, 2009 (North Ogden, UT) – A suicide in North Ogden, Utah has the state putting first responders on notice about possible hazards. North Ogden Police and North View firefighters responded to the report of a suicide on November 20. The victim had used hydrogen sulfide to kill himself. According to fire officials the victim had posted a note warning them and others of the dangers. One police officer and several firefighters who were at the scene were tested for possible exposure, but they were unharmed.^{xvi}

November 29, 2009 (Denver, CO) – Police called in a hazmat team to remove the body of a man found dead in a car downtown. Polices say the male found dead in the car on Tennessee near Huron was a suspected suicide. Because of the method of suicide there was concern about a substance in the car. Denver Fire hazmat was called as a precaution. No one else was injured in the incident. Denver Fire said the substance was labeled as "Hydrogen Sulfide" a toxic compound used in the separation of metals.^{xvii}

November 24, 2009 (Siesta Key, FL) – A hazardous materials team closed half of the Siesta Key Beach parking lot after a man committed suicide in his car using a dangerous mix of chemicals, the Sheriff's Office said. A note on the window warned others to stay away from the car because there was a chemical inside.^{xviii}

November 3, 2009 (East Bloomfield, NY) – A 21-year-old man was found dead at a park in East Bloomfield, 20 miles southeast of Rochester. The first officer to respond to the scene opened the door and found the body, along with noxious fumes, inside the vehicle. The officer also found a note reading "Keep Out" and "Stay Away" affixed to a window of the car. An autopsy determined the victim intentionally mixed chemicals to create lethal hydrogen sulfide gas.^{xix}

October 28, 2009 (Cayuga, NY) Cayuga County Sheriff's deputies are investigating the apparent suicide of a 22-year-old California man in the Village of Cayuga. Deputies say he used a mixture of hazardous chemicals to take his own life in a car parked outside a cemetery, which led a hazardous materials crew to respond to the scene. The car had signs in the windows warning others that hazardous materials were inside.^{xx}

May 10, 2009 (Toronto, Canada) – Toronto was the scene of a suicide by poisonous gas when a York woman released what is believed to be hydrogen sulfide into the air killing herself and threatening

others. The woman had called the police mid-morning to say she was taking her life using a chemical cocktail. When the police and fire department arrived the smell of rotten eggs was coming from the residence, prompting the evacuation of nearly 50 homes.^{xxi}

February 14, 2009 (San Jose, CA) – An 18 year old boy who was found unconscious in his San Jose home Thursday morning and transported to Santa Clara Valley Medical Center's emergency room, triggering a hazardous materials lockdown of the facility, died Friday afternoon, according to the Santa Clara County medical examiner's office. The cause of death has not been confirmed, though two pans containing hydrogen sulfide were found on a table in the teenager's bedroom, where he was found unconscious by his mother.^{xxii}

December 24, 2008 (Bartow, GA) – A man was found in his car at the Cooper Branch day use area of Lake Allatoona. Bystanders who discovered the vehicle did not open the door because of a sign taped inside the window reporting "Caution" and the name of the chemical. The responding sheriff noticed two buckets inside the vehicle with a yellow substance inside and a young man who did not appear to be breathing. County HAZMAT mitigated the scene and removed and deconned the body.^{xxiii}

August 26, 2008 (Pasadena, CA) - A 20 year old man parked his vehicle behind the Ethan Allen store on Rosemead Ave. and pasted a sign in the window of the vehicle warning others of "Danger" with a skull and crossbones. Inside the vehicle Hazmat crews found household cleaners along with the body of the victim. The victim was confirmed dead by the corner at the scene.^{xxiv}

May 27, 2008 (Mesa, AZ) - A former Theater Critic for the East Valley Tribune was found dead at his Mesa apartment. Mesa police were called to the apartment by friends and co-workers who hadn't seen him since Wednesday. His body was inside, and he apparently committed suicide. According to police reports, the 29 year old victim apparently inhaled a fatal combination of potassium cyanide and muriatic acid. The discovery required neighbors to evacuate their residences while hazmat teams investigated.^{xxv}

While many of these incidents involved victims who were willing to isolate themselves from the public and attempted to warn would-be responders of the danger, there is no room for complacency. The result may be fatal for anyone who enters a contaminated space without proper protection.

Responding to Chemical Suicides^{xxvi}

- Dispatchers and call takers should be alert for this type of call.
- Dispatchers and call takers should warn callers not to approach, or enter, vehicles, rooms or apartments where unresponsive people may have attempted chemical suicide.
- The caller may say there are warning signs on the vehicle but may not volunteer this information.
- The caller may not say anything about a strange smell (like rotten eggs or almonds) unless prompted when they call 9-1-1.

- Proper initial questioning may yield information vital to the safety of the first responders.
- The information must be immediately passed on to the first responders by the 9-1-1 personnel.
- Responders should be aware that these situations commonly occur in vehicles, residential bathrooms and other small spaces where a small amount of gas can quickly reach lethal concentrations.

- Carefully size up any situation involving an unresponsive person in an enclosed space.
- If a chemical substance is suspected, responders should follow their agencies' hazardous materials operational protocol and procedures, including requesting assistance from the appropriate HazMat team.
- Responders should wear appropriate PPE, including positive pressure self-contained breathing apparatus, whenever they are dealing with a suspected chemical suicide.



Warning signs taped to the window of the vehicle involved in a recent chemical suicide in New York State (NYSOFP&C)

- Consider wind speed and direction when determining the need to evacuate nearby structures.
- In an apartment building, consideration should be given to evacuating the entire building.
- IC will need to make an immediate decision for "life rescue" or "wait and hold". If believed to be an "unconscious victim" rescue responders should don appropriate PPE and SCBA to breach window or door to affect a quick rescue.
- If there's a possibility the victim is sleeping, attempt to wake them with a vehicle public address system, bullhorn or siren.
- If they cannot be awakened, responders should perform a thorough recon before entering the space to assist the victim.
- Individuals who initiate chemical suicide may, or may not, place warning signs on doors or windows to indicate the presence of deadly gas inside the space.

- Warning signs may not be easily detected or understood by other people –including responders!
- Warning signs may be hidden or obscured by condensation, frost, snow, or vapors produced by the reaction.
- Warning signs may be removed, become detached or dislodged, or blow away before emergency personnel arrive.
- Interview anyone who may have approached the scene to learn what they saw or smelled.
- A “rotten egg” smell would indicate hydrogen sulfide.
- An almond odor is typical of cyanide compounds.
- Look for indications a chemical reaction has been initiated.
- Typically you will find containers of household chemicals and pails, buckets, pots or other containers where the chemicals have been mixed.
- Improvised “containers”, such as a sink or the glove box of an automobile, could be used to mix the chemicals.
- If chemical containers are present, attempt to identify the chemicals from labels or a sales receipt.
- The reaction utilizes an acid, such as muriatic or hydrochloric found in many common cleaning compounds, and a sulfide present in many fungicides, paints, insecticides, and shampoo to produce Hydrogen Sulfide.
- The presence of containers of potassium cyanide, or cyanide compounds would indicate a reaction that produces hydrogen cyanide.
- This is less common than the hydrogen sulfide reaction as the cyanides are not as easily obtained.
- Air sampling equipment can be used to determine the presence or absence of hydrogen sulfide or hydrogen cyanide.
- A small hole may be punched in a car or home window, or a probe, or colorimetric tube inserted in the gap between a door to the room and the floor.
- A hydrocyanic acid tube will detect hydrogen cyanide.
- Hydrogen sulfide is heavier than air, but hydrogen cyanide is slightly lighter.

- If the vapor in the space cannot be identified, or the presence of hydrogen cyanide is confirmed entry should only be made by individuals protected by fully encapsulated chemical protective clothing (level A).
- Hydrogen cyanide is immediately dangerous to life and health at concentrations above 50 parts per million.
- Both hydrogen sulfide and hydrogen cyanide are flammable.
- The Lower Explosive Level of hydrogen sulfide is 4% and the LEL of hydrogen cyanide is 5.6%.
- There have been no incidents of fire reported with the chemical suicide incidents reported to date.
- It is believed that concentrations do not typically reach the LEL except at close proximity to the mixing container.
- Responders should eliminate ignition sources whenever possible.
- Vapors inside the space should be ventilated to the outside.
- Ensure no one will be endangered by the vapors before using natural or forced ventilation to air the space out.
- Anyone who has been exposed to the vapors should be decontaminated with soap and water.
- Clothing should be removed and double-bagged.
- Contaminated clothing and PPE should be laundered before being re-used.
- If alive, the victim should be stripped and decontaminated with soap and water before being transported from the scene.
- Deceased victims should be covered by a sheet, body bags are not recommended.

The big take home message is maintaining a heightened sense of situational awareness.

Resources

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Chemical Suicide Memo, New York State Office of Fire Prevention & Control Hazardous Materials/Homeland Security Bureau (November 6, 2009). See: <http://www.colofirechiefs.org/ffsafety/chemicalsuicidememo.pdf>.

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Responder Safety Information - Hydrogen Sulfide Suicide, Wake County, NC EMS Division (February 22, 2010). See: http://www.colofirechiefs.org/ffsafety/H2S_Suicide_Warning.pdf.

Ada County Sheriff's Office (Idaho) Officer/Emergency Responder Safety Bulletin (May 14, 2009). See: <http://www.vleoa.org/Content/Documents/Document.ashx?DocId=86676>.

Medical Management Guidelines for Hydrogen Sulfide, Agency for Toxic Substances and Disease Registry (ATSDR), Department of Health and Human Services. See: <http://www.atsdr.cdc.gov/Mhmi/mmg114.html>.

NIOSH Pocket Guide to Chemical Hazards - Hydrogen Sulfide, National Institute for Occupational Safety and Health (NIOSH), Centers for Disease Control and Prevention. See: <http://www.cdc.gov/niosh/npg/npgd0337.html>.

Chemical Suicides - First Responder Safety (PPT), Saline County Sheriff's Department, Missouri. See: http://www.colofirechiefs.org/ffsafety/Chemical_Suicides.pdf.

Hydrogen Sulfide (PPT) Shelby County EMS Training Division. See: http://www.colofirechiefs.org/ffsafety/Hydrogen_Sulfide_PPT.pdf.

These and other resources are posted on the CSFCA's Responder Safety: Chemical Suicide webpage, at: http://www.colofirechiefs.org/chemical_suicides.htm.

Endnotes

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^{iv} Chemical Suicide Sends First Responders To Hospital, KCTV Channel 5, December 22, 2009. See: <http://www.kctv5.com/news/22033404/detail.html>.

^v Medical Management Guidelines for Hydrogen Sulfide, Agency for Toxic Substances and Disease Registry (ATSDR), Department of Health and Human Services. See: <http://www.atsdr.cdc.gov/Mhmi/mmg114.html>.

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^{xiii} Suicide by Chemicals on Siesta Key Beach, Herald Tribune, February 6, 2010. See: <http://www.heraldtribune.com/article/20100206/BREAKING/100209796>.

^{xiv} Bloomfield Suicide Fits Unsettling Trend, Hartford Courant, January 9, 2010. See: <http://www.colofirechiefs.org/ffsafety/Bloomfield010910.pdf>.

^{xv} Chemical Suicide Sends First Responders To Hospital, KCTV Channel 5, December 22, 2009. See: <http://www.kctv5.com/news/22033404/detail.html>.

^{xvi} Hydrogen-Sulfide Suicide in Utah Prompts Notice to First Responders, KSL Channel 5, December 7, 2009. See: <http://www.ksl.com/?sid=8947952&nid=148>.

^{xvii} Hazmat Called to Remove Body from Suspected Chemical Suicide, KDVR Denver, November 29, 2009. See: <http://www.kdvr.com/news/kdvr-carsuicide-112909,0,6856876.story>.

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^{xviii} Man Kills Himself Near Siesta Key Beach, Herald Tribune, November 24, 2009. See: <http://www.heraldtribune.com/article/20091125/ARTICLE/911251030?Title=Man-kills-himself-near-Siesta-Key-beach>.

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About the Colorado State Fire Chiefs' Association

The mission of the Colorado State Fire Chiefs' Association is to provide leadership, education, and support to the Chief Officers of Colorado fire departments, in order to reduce the loss of life and property and to protect Colorado's citizens and institutions from all types of emergencies.



AMBULANCE HART
Hazardous Area Response Team



Chemical Suicides

Colin Pinnington
London Ambulance Service H.A.R.T.



Background

- Popular method in Japan (Hydrogen Sulphide)

TOKYO — A 14-year-old Japanese girl killed herself by mixing laundry detergent with cleanser, releasing fumes that also sickened 90 people in her apartment house, police said Thursday as they grappled with a spate of similar suicides. (*Thursday, April 24, 2008 Associated Press*)



Background

- **Moved to United States of America (Potassium Cyanide)**
When the officers arrived on the scene, they found the windows rolled up on the car and printed signs posted on the vehicle, warning people to stay away from the car because it contained poisonous gas (February 13, 2010 4:30am St.Petersburg Police Department)
- Dissemination of knowledge on the Internet its now coming to UK
- Specific suicide forums recommending the Chemical approach



Incidents in London in last 12 months

- Male – Plastic bag, Hose and Helium cylinder
Deceased upon L.A.S. Arrival, London Fire Brigade C.B.R.N. RRT provided Detection Information Monitoring (D.I.M.) LAS R.O.L.E. in situ Metropolitan Police arranged body removal
- Male – Ingestion of Potassium Cyanide as liquid
Vomited as swallowed, no ingestion, D.I.M. provided by Metropolitan Police, Clinical assessment by H.A.R.T. Including 12lead ECG in Gas Tight Suit, Decontamination by London Fire Brigade
Conveyed by Ambulance staffed by H.A.R.T. No Long term injury
- Two females in Finsbury Park N4 Ingestion of Potassium Cyanide



Double Female Suicide in Finsbury Park Hotel

- Found by Hotel staff as Deceased were due to check out.
999 called Ambulance only, S.T.E.P.S. 123 not activated
- Some chemicals already bagged by Deceased others open in waste bin
- Warning labels by paraphernalia and by bodies including data sheets and invoices from supplier.
- Very similar to recommended warning method commonly available on the Internet
- First crew stood by outside liaised with hotel staff and updated Emergency Operations Centre S.T.E.P.S 123



Finsbury Park

- **H.A.R.T. deployment**

Call passed to H.A.R.T. from Emergency Operations Centre (E.O.C.)

On route to location H.A.R.T. supervisor requested via E.O.C. for the Metropolitan Police Dedicated C.B.R.N. Unit (D.C.U.) and the London Fire Brigade including their C.B.R.N. Rapid Response Team (R.R.T.)

- **Initial plan**

H.A.R.T. to go forward with LFB RRT in Gas Tight Suits for clinical assessment while D.I.M. is being conducted prior to Police Dedicated C.B.R.N. Unit (D.C.U.) arrival. London Fire Brigade actively in favour of H.A.R.T. going forward with their R.R.T. D.I.M.



Finsbury Park

- **Crime scene**

L.F.B. recognised it as crime scene and handed over to police with offers of support for the D.C.U. to conduct D.I.M.

Due to London H.A.R.T.'s close relationship and training with the Metropolitan Police around forensic awareness H.A.R.T. went forward simultaneously with the LFB providing safety team and Decontamination

Police also keen for HART to go forward with D.C.U. to perform Recognition of Life Extinct R.O.LE. This enables the Deceased's bodies to be left in place for the coroners representatives

DCHAPS and Toxbase used, HPA and Department of Health Emergency Preparedness Division updated and involved



Finsbury Park

- **Findings**

HART found 2 patients deceased believed to have ingested Potassium Cyanide made up in drink form. D.I.M. Confirms
Empty Zopiclone – Valinil packets (both have sedative effects)

- **Complications**

Its decided, with HART LFB and Metropolitan Police input to not use standard coroners procedure due to off gassing potential.
CBRN Body bags arranged by Police



Finsbury Park

- **2nd Scene**

H.A.R.T. Night shift deployed to the two patients address's to provide clinical support in CR1 to DCU D.I.M. searching, and to comfort the patients relatives

Remote access was gained to the Patient's computers by Police and a history gained of internet access which pointed to purchase of Potassium Cyanide

No More Substances found

Police providing safe undressing.



Conclusion of call

- C.B.R.N. Body Bags arrived, H.A.R.T. provided clinical cover to Disaster victim Identification staff for removal of deceased both teams wearing CR1.

During body movement Hydrogen Cyanide was detected by D.V.I.

U/K level of P.P.E. used during autopsy

Consideration given to get Dicobalt edetate brought to local A&E and then to scene

- Possible resilience issues as Day shift signed off post 0300 and night shift were deployed at 2 other sites



Agencies supported by and that utilised H.A.R.T.

- London Ambulance Service
- London Fire Brigade CBRN RRT team and Operational commanders
- Metropolitan Police Service Dedicated CBRN Team
- Disaster Victim Identification Service D.V.I.
- DCHAPS
- Health Protection Agency
- Department of Health Emergency Preparedness Division
- HM Coroners office

Chemical & Detergent Suicides

Hampden County Sheriffs Dept
627 Randall Rd, Ludlow, Ma 01056
Office 413-858-0182
Cell 413-531-8699
Eric.stratton@sdh.state.ma.us

DETERGENT SUICIDE

Detergent suicide is a newer method of committing suicide that appears to be gaining in popularity. According to reports suicide rates are on the increase. One method that appears to be on the rise is the use of common household chemicals to make a lethal gaseous combination. This combination of ingredients yields Hydrogen Sulfide Gas (H_2S).

This new method can clearly be traced back to Japan. At least 500 Japanese men, women and children took their lives in the first half of 2008 by following instructions posted on Japanese websites, which describe how to mix bath sulfur with toilet bowl cleaner to create a poisonous gas. The method has been able to gain popularity due to the internet.

DETERGENT SUICIDE

Police, Fire, and EMS should be aware that these suicides typically take place in a confined space like a vehicle , closet or small bathroom. The subject usually places the chemicals in the bucket and mixes the combination together. As the mixture is combined it releases the Hydrogen Sulfide Gas.

In some cases the subject places bio-hazard signs around the vehicle to warn responders. Subjects have also placed duct tape or similar material around the windows and vents to contain the gas.

Recent Reported events in the US and Canada

26 Aug 2008 Pasadena, California

24 Dec 2008 Bartow, County, Georgia

10 May 2009 Toronto, Canada

14 May 2009 Ada County, Idaho

15 Dec 2009 Gwinnett County, Gorgia

12 Feb 2009 San Jose, California

Hydrogen Sulfide

- Toxic gas
- Usually encountered in confined space rescue
- Colorless gas
- Immediately Dangerous to Life and Health (IDLH) level of 100 parts-per-million
- NFPA 704 Health Risk rating of 4
- Respiratory hazard

Exposure	Parts Per Million (ppm)	Physical Effect
Low Level	< 40 ppm's for less than 15 minutes	Eye and mucous membrane irritation
Moderate Level	> 20 ppm	Pulmonary membrane irritation
High Level	50 – 400 ppm	Cough, dyspnea, cyanosis and confusion
Severe – High	>500	Fatal systemic toxicity

At 700 ppm just 2-3 breaths can cause immediate death

Typical Chemicals Used

Acid Sources

- Muriatic acid
- Sulfuric acid
- Lysol disinfectant
- Lysol toilet bowl cleaner
- The Works toilet bowl cleaner
- Blu-lite Germicidal acid bowl cleaner
- Kaboom Shower, Tub and Tile cleaner
- Tile and Stone cleaners

Sulfur Sources

- Artist oil paints
- Dandruff shampoos
- Pesticides
- Spackling paste
- Latex paints
- Garden fungicides
- Lime Sulfur
- Bonide

Warning Signs / Vehicle

- Subject appears unconscious and unresponsive
- Tape over vents and windows
- Suicide note
- A posted note to warn rescuers of present danger
- Bucket , pail , pot or cooler in the vehicle containing chemicals
- Empty containers of chemicals in or around the vehicle
- Smell of rotten eggs

Response to Detergent Suicide in a vehicle

- Survey the scene
- Survey the inside of the vehicle
- Determine responsiveness of subject
 - Conscious or unconscious
 - Appears to be breathing – chest rise and fall
- If the subject is conscious can they open the door and exit the vehicle. Have the subject walk / crawl away from vehicle to fresh air.
- Be careful when treating the patient due to the off gassing from the subjects clothing and exhaled breaths.
- If the subject is unconscious and there is no apparent breathing for 30 seconds to a minute stand by for Haz-Mat and back away from the vehicle. **Follow state and local protocols**

Treatment once removed from vehicle or residence

- Access Airway – Breathing – Circulation
- Ideally – rescuer's in proper PPE should provide a patient assessment and remove the patients clothing and double bag it
- Check for respiratory effort and rate and assist with ventilations as needed. 100% Oxygen would be recommended
- Check for pulse and if available place the patient on the monitor and evaluate the rhythm
- Attempt venous access
- Attach pulse oximeter
- When possible attempt to do as much as possible enroute to the appropriate hospital

Always follow state and local medical protocols

Response to a detergent suicide in a dwelling

- Any outward visual signs as you approach the residence or apartment building
 - Signs posted on the front of the house
 - Other persons from inside the house complaining of difficulty breathing
 - The smell of rotten eggs or sewer gas in the area and gets stronger as you approach the target residence
 - Be prepared to evacuate the residence or apartment building

The following exchange was taken off a website that was discussing what chemical should be used and how to calculate the mixture!

You can find a good amount of the sulfur component needed for your “stink bomb” here: <http://store.bestsaltlamp.com/blmbk.html>

Remember that a 1% concentration results from adding 1.28 ounces of this particular bath salt per gallon of water. Do the math, and a 2lb bag will get you a gallon of water with a 25% concentration of sulfur bath salts. A matching concentration/volume (about 25%/gallon) of the hydrochloric acid component can be achieved from about 5 24oz bottles of “The Works” brand toilet cleaner.

(Available to purchase anywhere, but it’s very inexpensive here:

http://www.hectorshardware.biz/shop/product.asp?dept_id=100103&sku=620920)

ALSO: be aware that in high concentrations/volumes, this gas (H_2S) is often flammable. This gas can disable your sense of smell upon even one inhalation, thus making it even more dangerous to yourself.. or, if I read between the lines of your question: YOUR NEIGHBORS. If you’re going to “stink bomb” yourself into oblivion... I suggest you take it outside (car, refrigerator box, etc), or devise a way to concentrate and administer a much smaller amount via garbage bags and a hose. Also remember that someone who wants to live is going to have to clean up your little mess, so a great deal of highly visible signage indicating the presence of H_2S gas would be the polite thing to do....

Happy afterlifing, dumbasses.

The following exchange was taken off a website that was discussing what chemical should be used and how to calculate the mixture!

ACID SOURCE

****The Works(R) Toilet Bowl Cleaner (15-25 percent HCl)**** This is the most easiest to obtain. Cooooooooooooo!!!!!!!!!! *You can use about 35% sulfuric acid(H_2SO_4) of a car battery electrobath. **

SULFUR SOURCE

Pesticides (5-30 percent calcium polysulfides)* BONIDE(R) Lime Sulfur Spray http://www.bonideproducts.com/products/product.php?category_id=325&sku=325 is the most famous and is the most easiest to obtain. Cooooooooooooo!!!!!!!!!!**BONIDE Lime Sulfur Spray contains 28% calcium polysulfide.*In U.S.A. you can search for the nearby retail stores which sell BONIDE Lime Sulfur by inputting 5-Digit Zip Code. http://www.bonideproducts.com/dealer_locator/

**When the Lime Sulfur of other brands is used, let's confirm the density is 20% or more in MSDS. [Suicidal poisoning due to hydrogen sulfide produced by mixing a liquid bath essence containing sulfur and a toilet bowl cleaner containing hydrochloric acid]

<http://www.ncbi.nlm.nih.gov/pubmed/18516944>

To examine the amount of hydrogen sulfide produced, small portions of these liquids were mixed in a 560-mL volume flask. The results showed that 0.1 mL of each liquid produced 4,950 ppm of hydrogen sulfide, and 0.2 mL of each produced 10,800 ppm. According to these results, if the cabin volume is assumed to be 3,300 L, mixing 120 mL of each liquid produces a lethal level of hydrogen sulfide, i.e., 1,000 ppm. Toilet bowl cleaner used for suicide in Japan is containing 9.5% HCl. It is equal Lysol(R) Toilet Bowl Cleaner (9.5 percent HCl). Liquid bath essence "610HAP" used for suicide in Japan is containing about 20%-25% calcium polysulfides. It is equal Pesticides lime sulfur.

ADA County, Idaho 14 May 2009



Approaching vehicle, responders can clearly see there is some type of signing on the vehicles windows.

What if the approach was at night would the signage still be clear?



FF in proper
PPE

Patient on
evaluation is
unconscious and
unresponsive

Mixture
on
passenger
seat


Biohazard
Signage



Be aware of the foul smell of sewer gas or rotten eggs as you approach

Conscious/Unconscious
Responsive/Unresponsive
Chest Rise Yes/NO
Skin Color
Signs of foul play



A photograph showing several white plastic containers of chemicals on a dark asphalt surface. On the left is a large jug labeled 'Muriatic Acid'. In the center are three smaller jugs with purple caps, one labeled 'Lime Sulfur'. In the foreground is another large jug with a white cap. On the right is a large white bucket with handwritten text 'Bucket Mixture H2S?' and a red warning label. A small black tag with 'Sulfur' written on it is attached to the bucket. A red-bordered text box is overlaid on the bottom left.

Containers of chemicals removed from vehicle. More than enough to do the job.

This is true at
700 ppm

HYDROGEN
SULFIDE

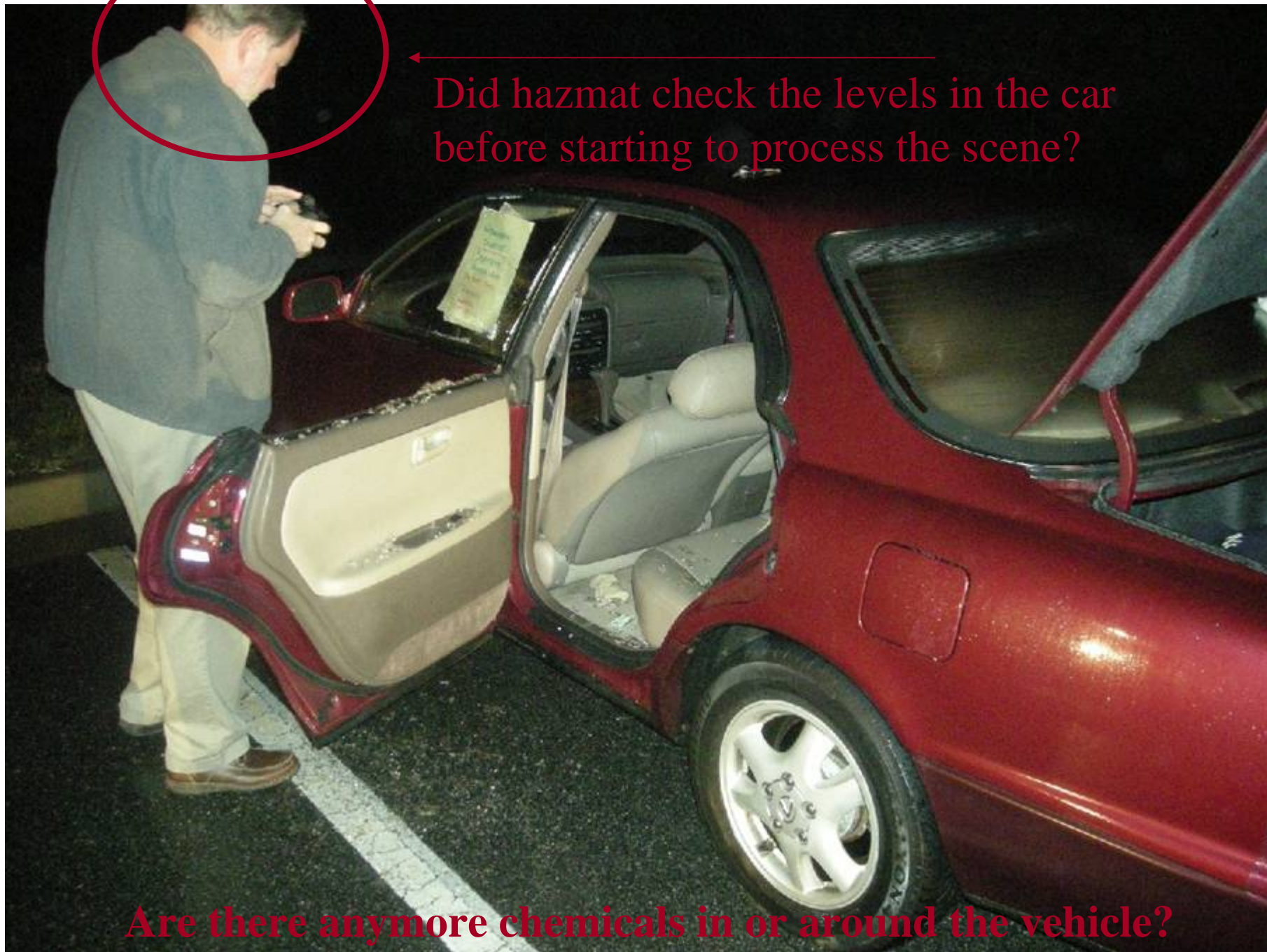
SUICIDE

POISON GAS

DO NOT OPEN

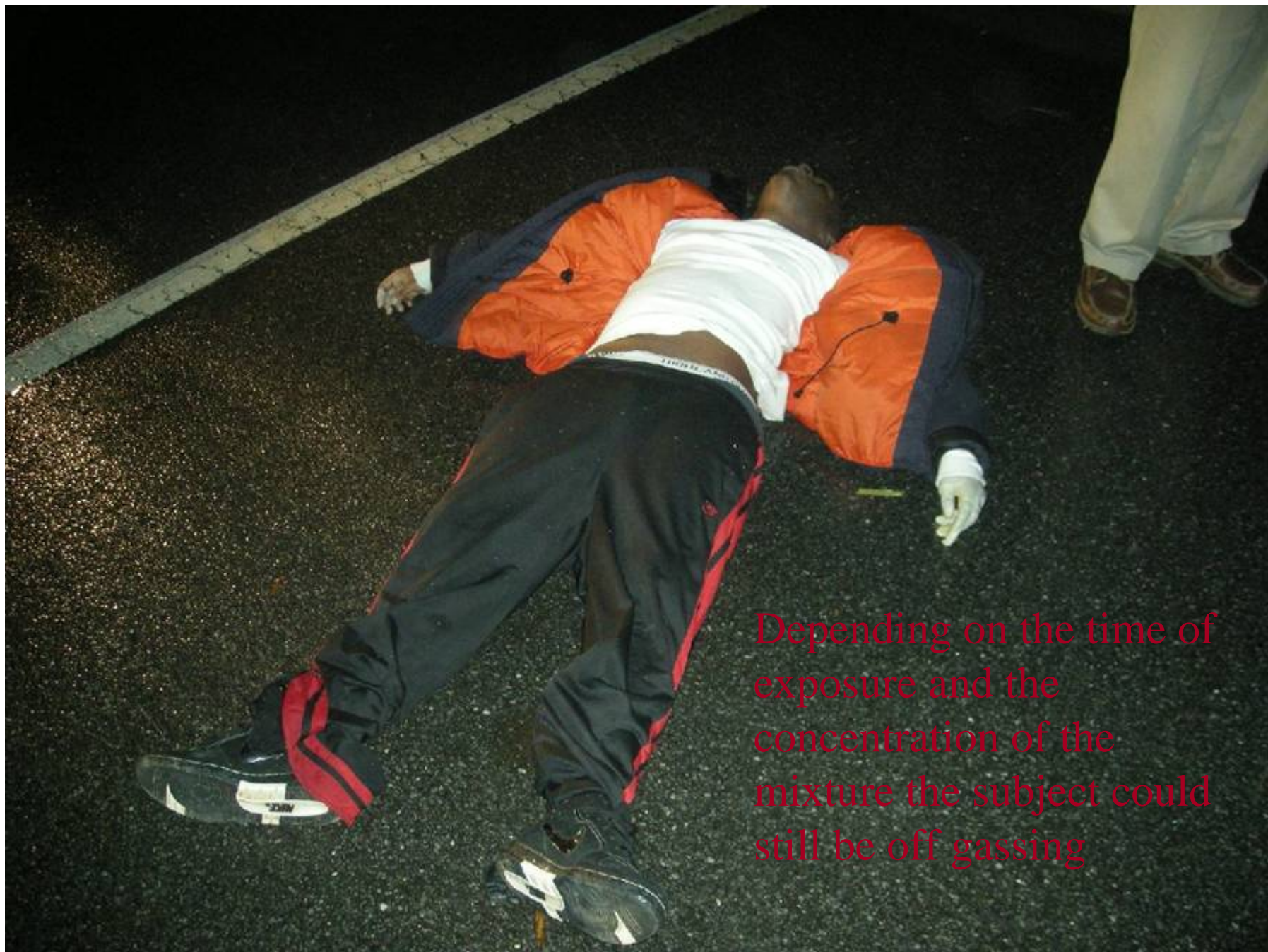
DANGER

1 BREATH
CAN KILL



Did hazmat check the levels in the car
before starting to process the scene?

Are there anymore chemicals in or around the vehicle?



Depending on the time of exposure and the concentration of the mixture the subject could still be off gassing

PLEASE

DONATE
ORGANS

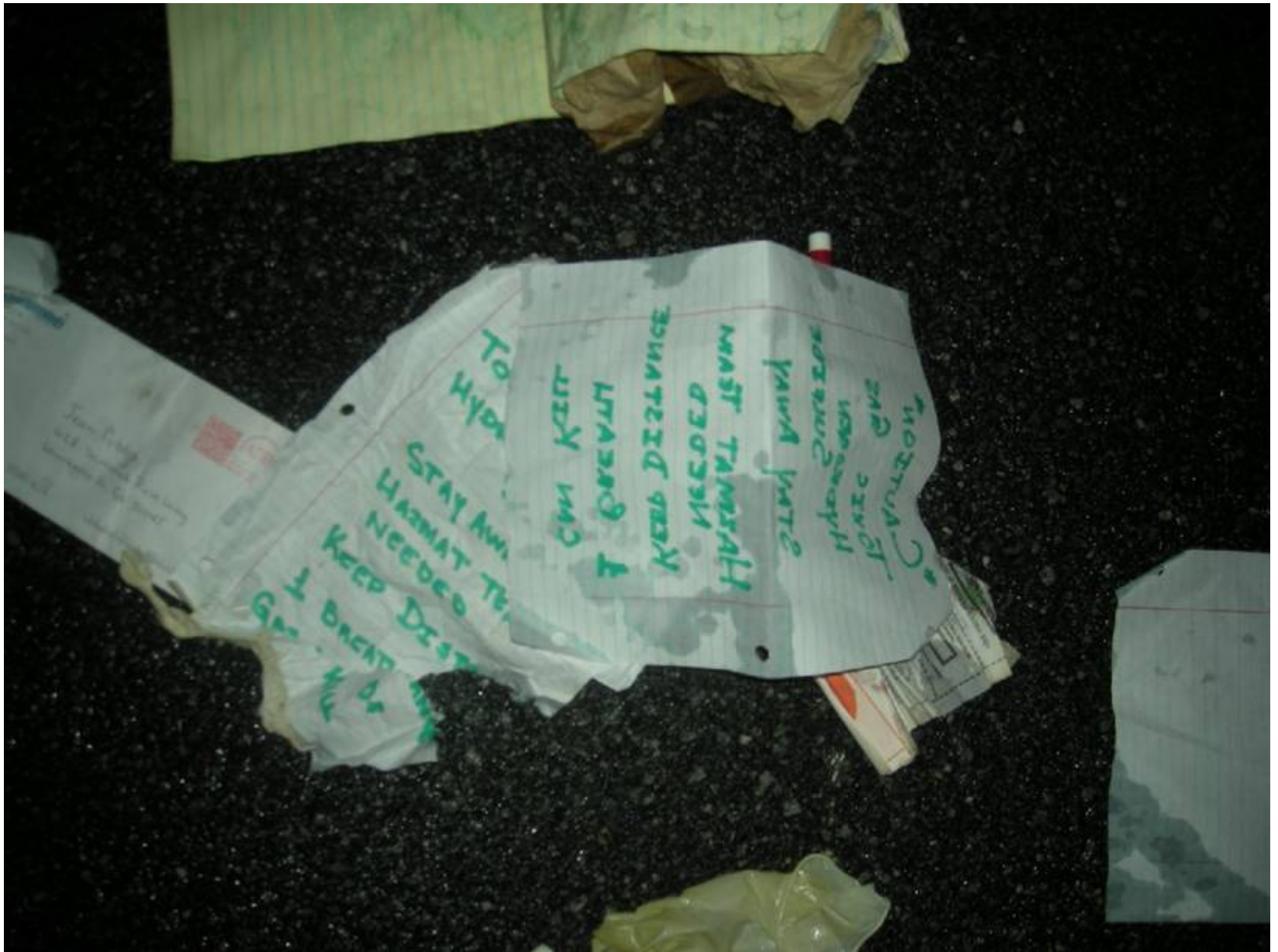
IF BODY IS
DISCOVERED
IN TIME

Let me check the
local protocol on
that one!

For Myself I indicate
Family



These are the chemicals and containers that the subject from the previous slide used.



Practice versions of the note on the window

This subject committed suicide mixing cyanide and an acid



Resources

http://msds.chem.ox.ac.uk/HY/hydrogen_sulfide.html

<http://www.wired.com/threatlevel/2009/03/japanese-deterg>

<http://www.kctv5.com/print/22033404/detail.html>

ADA County Sheriffs Office

Toronto EMS

<http://firechief.com/hazmat/ar/detergent-suicide-alert-20090914>