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# REGION 6 LEPC Update

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**In December, 2009, we covered the EPA Schools Chemical Cleanout Campaign (SC3) Program. Many LEPCs were very interested in the program, and indicated there have been several incidents involving school labs or hazardous materials accidents. So we highlight several of these. Fred Cowie, our adopted Poet Laureate, has provided us another thought-provoking article. As always, if you received this Update from someone else, and would like to be added to the email list, just email us at one of the emails above.**

**Steve & Hiliary**

## CSX Safe

CSX railroad recently launched a free, online training program to educate emergency personnel on how to respond to incidents on and around railroad property and equipment. The site at www.csxsafe.com, is the first of its kind launched by a U.S. railroad for this audience.

CSX Safety Awareness For Emergencies

CSXSAFE offers the opportunity to gain an understanding of how railroads operate, including hazards of working around the rails and protocols to keep responders safe. This program takes less than an hour to complete, and is intended to provide information to public agency personnel in fire and police departments, rescue and emergency medical organizations.

"Every day, emergency workers put themselves in harm's way to protect the public in homes, office buildings, factories, agricultural facilities and other locations, each with distinct hazards," said Mike Lunsford, CSX director-chemical safety. "CSXSAFE is one of the ways we help these brave men and women by educating them on the unique challenges posed by railroad operations. Emergency personnel have to know a great deal about a variety of different industries and settings, and we want to make it as easy as possible for them to learn about ours."

The educational section of the site is organized into four parts, providing basics on Safety, CSX Operations, Initial Response and Railroad Equipment. Upon completion of the training modules, participants take a quiz, print a certificate of completion and are able to browse through upcoming in-person training opportunities being offered across the CSX network.

"For those who don't work for the railroad, our equipment can be intimidating and some safety risks may not be apparent," said Cliff Stayton, director of Community Affairs & Safety. "This training is designed to help emergency workers make good decisions quickly and know who to call to get help."

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# School Time Chemical Incidents


In the November, 2009, LEPC Update, we provided information on a program being promoted by EPA Headquarters, known as the School Chemicals Cleanout Program, and how local communities, such as LEPCs, could partner with industry to help in this initiative.

Since the Update came out, we have received many requests from LEPCs on more information concerning the program. Thankfully, there is a comprehensive webpage that LEPCs and schools can visit to obtain additional information:

http://www.epa.gov/waste/partnerships/sc3/index.htm

Additionally, many people have asked if there are many news stories about school lab chemical accidents, or in general, accidents involving schools and hazardous chemicals. A search of the internet provided a long list of these. So, we have decided to use this Update to highlight many of these incidents to bring this issue even more visibility.

***Thanks to the Bexar County, Texas, LEPC for promoting this issue on their website and bringing it to the attention of many other LEPCs.***

## One injured in chemical explosion on Tech campus

### Lubbock Avalanche-Journal

One person was injured in a chemical explosion in the Texas Tech chemistry building. The explosion happened about 4 p.m. and left one person injured with burns to the hands and face, said Gordon Hoffman, Tech's assistant police chief.

The person injured was a teaching assistant, Hoffman said. The victim was taken to a Lubbock hospital with non-life-threatening injuries.

Hazardous-materials crews were not called to the scene, he said.

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The U.S. Chemical Safety Board announced it will investigate the chemical explosion that injured a graduate student earlier this month Texas Tech's campus.

Preston Brown, was handling a high-energy metal compound when it exploded and burned his hands and face.

Brown was taken to the burn intensive care unit at University Medical Center, where he remained in critical condition.

Brown received severe burns and lacerations to his face and hands when a mixture of nickel hydrazine perchlorate exploded during the afternoon accident in Texas Tech's chemistry building, according to a police report.

## Chemistry class explosion injures seven

### Times Record-Herald

BOICEVILLE, NY — A chemistry class gone awry resulted in an explosion and HAZMAT teams being dispatched to the Onteora High School on Route 28.

Officials said a teacher was demonstrating interactions between potassium chlorate and food items when the unexpectedly strong reaction occured.

## Teacher hurt in chemical explosion

### The Advertiser

ADELAIDE, AUSTRALIA -- A STUDENT and teacher were injured when a home-made chlorine bomb exploded at a western suburbs high school on Friday.

Fire crews were called to Brighton Secondary School when a teacher discovered a plastic bottle filled with chemicals in a bin, which subsequently exploded in her hands, burning her face. A male student was burned on his upper leg.

Less than three grams of potassium chlorate were involved. The chemical is used in the manufacture of safety matches and explosives.

Seven students and the teacher were transported to area hospitals for treatment. The teacher and two students were treated for minor cuts and burns. The remaining students were checked for minor injuries.

Parents were contacted by school staff immediately and the school was on "modified lockdown" until the injured students and staff were transported out of the building.

Classes reported hearing a sound like a loud door slam and the school's Quick Response Team responded immediately.

Police determined that HAZMAT response was not needed for cleanup after the explosion, school officials said.

The home-made explosive was allegedly made and placed in the bin by two Year 10 boys, who were interviewed by police.

Graham Goodwin, officer in charge of Sturt local service area, said the incident was not a part of "muck-up day" antics. "I'm aware that some Year 12 students are involved in what they commonly call muck-up day," Supt Goodwin said. "These students were not involved in that particular activity and they're not Year 12 students."

The students responsible for the bomb are thought to have found the information on the online *YouTube*. Supt Goodwin warned people not to attempt to create home-made explosives.

"We know some information is available on the internet about how to mix some of these things but often, as we've seen today, they can have catastrophic and tragic results," he said. The teacher was taken to Flinders Medical Centre for treatment.

## *City investigates chemical containers found near school, retirement home*

### *The Stamford Advocate, Conn.*

STAMFORD, CT -- City officials are investigating the discovery of potentially hazardous materials on the property of Scofield Magnet Middle School and the nearby Scofield Manor retirement facility.

Turn of River firefighters and a state DEP official responded to the locations after a North Stamford resident reported finding a rusted 55-gallon barrel north of Scofield Magnet Middle School. Later that day, area residents led officials to nearby Scofield Manor, where they found a 5-pound bag of a banned pesticide and other chemical containers, according to witnesses.

City officials said they are treating the materials as hazardous and have enlisted a consultant to investigate the barrels' contents. City officials planned to begin testing the contents, but heavy rain prevented further investigation, they said.

"They went out there and inspected and found (the drums) could potentially contain some unknown chemicals," Turn of River Fire Chief Frank Jacobellis said.

"Initially there's going to be testing, and if the DEP discovers there are some chemical issues, then there's going to be a cleanup effort. Then DEP will try to figure out who's responsible."

The discoveries came amid concern about chemical drums found in Scofieldtown Park, a former industrial dump across the street from both the school and retirement home. They said they found 28 chemical drums on the grounds. City officials had planned to scout the property Monday, but that effort was also canceled due to rain.

Firefighters responded to the scene and roped off the area with tape. City officials contacted the state Department of Environmental Protection, and the DEP emergency response team reported to the site, DEP spokesman Dennis Schain said.

Based on conversations with DeFalco and another North Stamford resident, Bob Boucher, the DEP official learned of other potentially hazardous materials stored or discarded on the Scofield Manor property.

State officials believe the drum on the Scofield Middle School property may contain waste oil, Schain said.

City officials said their concerns were compounded because Boucher admitted to opening the barrel found on the middle school property. Boucher said he did open the barrel Saturday, then resealed it, because he wanted to see what was inside before city officials "made it disappear." The drum appeared to contain a petroleum-based liquid, Boucher said.

Schools spokeswoman Sarah Arnold said school officials were not aware of the discovery Monday. After The Advocate brought the barrel's existence to the school administration's attention Monday, schools facilities contractor Al Barbarotta made arrangements to meet with City Engineer Lou Casolo Tuesday morning, Arnold said.

# Nothing toxic found in James Buchanan High School gym after complaints

### Chambersburg Public Opinion

Mercersburg, PA -- Tuscarora School District officials say James Buchanan High School is safe to occupy following an incident last week that sent three people to area hospitals.

School Superintendent Rebecca Erb said that two students and one parent received medical attention from two hospitals after complaining of eye itching and redness following a basketball game in the JBHS gym.

Erb said that several others who attended the basketball game called the district later and complained of eye discomfort.

A Hazmat (hazardous material) team came to the school on Saturday and "found nothing in the gym or building," according to Erb.

Erb said JBHS's basketball game was held at the Mercersburg Academy following the incident. Even though the Hazmat team said the building and the gym were safe to occupy, she said the district decided to hold the game at the academy to avoid further disruption.

During the high school's renovation project, Analytical Laboratories, Middletown, routinely samples air quality throughout the building.

But, Erb said the company collected air quality samples following the incident and "most of the samples are back and showed no evidence of anything that caused the symptoms."

She said a thorough cleaning of the gym was done as a precaution using a HEPA filter cleaning system to clean out the air in the gym, and custodians cleaned the bleachers and surrounding areas.

"We have no leads. No one can draw a reasonable conclusion about what would have caused this. We have had at least two events in the gym since the incident and had no problems," said Erb.

# Students treated in lab mishap

### Rocky Mountain News

Six students were treated for minor chemical exposure after an explosion in a Denver Waldorf School science laboratory, a fire spokesman said.

The blast apparently was triggered when someone mixed sodium hydroxide and water in the lab.

The students were treated at the scene and released.

The school was evacuated, but youngsters re-entered the building later that morning.

A hazardous materials team was sent to the school because of the chemical exposure.

Sodium hydroxide is an active ingredient in caustic materials such as lye, and it can cause skin burns and irritate eyes and lungs.

# Prof dies in lab accident

### Independent News Online

Nancy, France - A large explosion rocked a university's chemistry department in eastern France on Friday, killing a professor who was blown through the ceiling and seriously injuring a student, authorities said.

It blew out windows, blackened walls of a school building and spewed debris dozens of metres on to a lawn outside.

The 40-year-old professor was propelled through the ceiling of a school laboratory, and found dead on the floor above, according to Mulhouse City Hall. The woman student was in intensive care at a nearby hospital.

Ten other people were also hospitalized for treatment after suffering injuries from broken glass, state officials in the Haut-Rhin region said.

Many others were shaken up in the blast, which occurred in a laboratory that researches high-risk chemical procedures.

"We thought it was an earthquake," a local resident identified as Jean-Pierre Langer told TF1 television. "It really shook."

## Students injured in WRA fire settle suit for $18.9 million

### Karl Turner, The Plain Dealer

Cleveland, Ohio: Two students injured when a chemistry experiment burst into a ball of fire at Western Reserve Academy settled their lawsuit against the private boarding school for $18.9 million.

A lawyer for the students said the 2006 fire is the past, and the settlement is only a footnote to the greater good that has emerged from the case.

Paul Perantinides, the lawyer for students and their families, said they will voluntarily spend part of the settlement to hire a nationally-recognized education-safety expert to create a program that will prevent similar accidents.

The families of the victims Calais Weber and Cecilia Chen will spend at least $100,000 to hire Jack Gerlovich, professor of science education at Drake University in Des Moines, Iowa, to improve school safety measures.

The flash fire left burns over 46 percent of Calais' body, and Cecilia was burned over 18 percent of her body, according to Hudson fire officials. The Western Reserve teacher was demonstrating how burning chemical salts produce different colors, with the aid of methanol burning in lab dishes. Aprons and protective eyewear were at hand and were supposed to be used but were not, the families' lawyer said.

The contract students signed before taking the lab class required use of the safety gear, he said. Perantinides said the teacher was at fault because she invited the students to gather too close to the experiment, introduced more methanol when the flames diminished, failed to perform the experiment behind a safety shield at least 10 feet away from the students, and failed to use a vent system that would have prevented the fire-ball that ultimately engulfed the students.

## Research assistant dies of injuries suffered in December lab fire

### UCLA News

Los Angeles, CA: A staff research assistant who was seriously burned last month in a laboratory fire at UCLA died of her injuries Jan. 16 at the Grossman Burn Center in Sherman Oaks, Calif.

Sheharbano (Sheri) Sangji, 23, incurred second- and third-degree burns over 40 percent of her body before the chemical fire was extinguished by a colleague. She was initially treated at Ronald Reagan UCLA Medical Center and then transferred to the Grossman Center.

The accident occurred in UCLA's Molecular Sciences Building while Sangji was working with t-butyl lithium, a highly flammable compound that spontaneously burns upon exposure to air, campus administrators said. The events that led to the compound igniting are still under investigation, but the fire engulfed her clothes. Sangji had been employed at UCLA since October.

## Accident at Mercer lab causes explosion, hospital trip

### The Atlanta Journal-Constitution

An accident in a Mercer University science laboratory caused a small explosion but no serious injuries late Tuesday afternoon.

One person underwent chemical decontamination procedures and was taken to a hospital as a precaution after the incident in the College of Pharmacy and Health Sciences building off Chamblee-Tucker Road and I-85, said DeKalb County fire Capt. Eric Jackson.

"It appears there was some cleaning that was going on utilizing some hydrochloric acid and somewhere in the midst of that there was a reaction that resulted in a small explosion with no fire," Jackson said.

The building was evacuated while authorities checked for any other contamination.

## Explosion at school chemistry lab

### BBC News

Four pupils and a teacher have been taken to hospital after an explosion in a classroom.

Emergency services were called to Heolddu Comprehensive in Bargoed after reports of an explosion.

The pupils and their teacher were "washed over" by an ambulance crew because of the chemicals involved.

A spokeswoman for Caerphilly Council said they were only taken to hospital as a precaution.

"The teacher was performing an experiment in the laboratory's fume cupboard and the pupils were observing when the incident occurred," the spokeswoman said.

She added: "The incident resulted in a small amount of chemicals being splashed onto the teacher and pupils' clothing. As a precautionary measure, the school - following its procedures for such an incident - sent the five individuals to hospital and called the fire service to cleanse the area."

The pupils and teacher were taken to Prince Charles Hospital in Merthyr Tydfil.

South Wales Fire and Rescue Service sent appliances from four different stations and a chemical incident unit.

Firefighters ventilated the chemistry laboratory to make it safe.

"We took a number of patients to casualty but only as a precaution. As far as I know, nobody was admitted to the hospital."

Deputy Head teacher John Woodier said: "This incident is unfortunate, but the procedures for such an occasion are in place. We are satisfied that everything has been done to mitigate any further potential injury to staff or pupils. We are grateful for the swift response by the fire and ambulance services."

## Girl hurt in explosion at school

### Swanageview

A 10-year-old schoolgirl was airlifted to hospital suffering from burns to her hands after a small chemical explosion at her school's science block. Emergency crews were called to Swanage Middle School, Dorset.

The pupil was airlifted to Dorset County Hospital in Dorchester where police said she was kept in overnight for observation.

Fire crews spent an hour at the scene where they put out a small fire.

Dorset Police said they were called to reports of a possible chemical explosion at the school.

A spokeswoman for Dorset Fire and Rescue said they received reports that an explosion had occurred in the science block and that the girl was airlifted to hospital by air ambulance.

## Student Sets Off Explosion

### Southern Maryland Online

A Prince George's high school student faces charges after he allegedly set off an explosive device at school Monday.

Fire and EMS workers were called to Crossland High School in Temple Hills for the report of a chemical explosion.

Investigators said a freshman detonated a homemade explosive device in his chemistry class. The school had to be evacuated. There were no reported injuries. The teen has been charged as a juvenile with manufacturing and possesing a destructive device and wreckless endangerment.

Fire spokesman Mark Brady said the student tried showing other students what he made at a bus stop this morning. When the device didn't detonate, he put it in his bag and carried it to class, where it exploded unexpectedly.

Investigators said the student learned how to make the explosive online. They said they don't believe he meant to hurt anyone, but he could still face consequences.

## Chemical explosion injures 3 at TVHS

### North County Times

TEMECULA, CA —— A reaction caused when a student mixed two chemicals in a soft drink bottle caused an explosion Friday at Temecula Valley High School that injured three students and sent 40 others to the school's gym to be decontaminated, as a precaution.

The incident happened in a third-period biology class and brought an armada of emergency vehicles, including Temecula police and fire crews and the Riverside County Hazardous Materials Team, to the campus on Rancho Vista Road.

District officials declined to name those injured by the explosion.

The teen who reportedly mixed the chemicals, an 11th-grader, was taken by air ambulance to Arrowhead Regional Medical Center in San Bernardino County for treatment of facial and other burns.

The other two students, one male and one female, were taken by ambulance to Inland Valley Medical Center with minor injuries, authorities said. Those students complained of difficulty breathing and stomach aches, fire officials added.

Clark identified a chemical involved in the explosion as potassium permanganate, a dark purple crystalline compound and strong oxidizing agent "used to neutralize bad-tasting and malodorous impurities in water," according to the Web site of the American Chemical Society.

The other chemical was not identified.

Clark said she did not know if the potassium permanganate was used in the biology class or if it had been brought into the class.

Students were taken to the boys and girls locker rooms, stripped of their clothes and rinsed off from head to toe as a precaution, said California Department of Forestry Capt. Jason Neuman.

"Once decontaminated, the students were medically evaluated and then cleared," Neuman said. "They're being interviewed by the Fire Department and Hazmat teams to try and find out what happened."

## Minor explosion at Rancho school

### Inland Newspapers

Rancho Cucamonga, CA: Twenty-two people at Los Osos High School in Rancho Cucamonga were taken to hospitals after a minor explosion in the cafeteria.

A chemical device was placed in a trash can in the cafeteria and went off, Rancho Cucamonga fire Chief Peter Bryan said.

The blast caused an acidic reaction and some people in the cafeteria complained of burning eyes, respiratory problems and nausea. There were no serious injuries.

Students were held in their classrooms for more than two hours. The campus was not evacuated.

There were 150 to 200 students in the cafeteria at the time of the blast, said Chris Hollister, principal for Los Osos.

A private contractor will make sure the area is clean before students can return to class.

School officials contacted parents through the call system to notify them about the incident.

Police, fire, and hazardous material officials are investigating.

Three staff members were among those taken to area hospitals.

## Riverside School Explosion

### Riverside Fire Department Reports

A chemical explosion was reported at Temecula Valley High School Firefighters from the Riverside Fire Department responded to the school and found the class and general area being evacuated by school officials. Based on information and inspection of the area, the incident was determined to be a Hazardous Materials and multi-casualty incident.

Three students suffered injuries from the initial explosion. The students were decontaminated for the presence of chemicals and treated for injuries. One male was transported by an air ambulance. The other two students, were transported by a ground ambulance to for evaluation.

38 students and several staff members were decontaminated at the scene for possible exposure to the chemicals. Initially, some of those students complained of difficulty breathing and stomachaches. Other than the three students who were burned by the chemicals, no one else was transported by ambulance to a medical facility.

The explosion occurred as the result of a chemical reaction. Two incompatible chemicals were mixed and the chemicals violently exploded. The explosion caused the chemicals to spray the three students. This caused burn injuries.

## Students treated in lab mishap

### Alan Gathright, Rocky Mountain News

Six students were treated for minor chemical exposure Thursday after an explosion in a Denver Waldorf School science laboratory, a fire spokesman said.

The blast apparently was triggered when someone mixed sodium hydroxide and water in the lab about 9 a.m., the Denver Fire Department said.

The students were treated at the scene and released.

The school was evacuated, but youngsters re-entered the building about 9:30 a.m.

A hazardous materials team was sent to the school at 940 Fillmore St. because of the chemical exposure.

Sodium hydroxide is an active ingredient in caustic materials such as lye, and it can cause skin burns and irritate eyes and lungs.

## Chemical Spill Burns USF Student In Science Building Lab

### St. Petersburg Times

TAMPA - A University of South Florida graduate student was taken to a hospital this afternoon after a chemical spilled in a science lab, authorities say.

The graduate student was opening a container of butylamine when it splashed and burned his face, Fire Capt. Bill Wade said.

The student, whose name was not released because of medical privacy laws, was rinsed off in a decontamination shower in the science lab.

He was taken to Tampa General Hospital and was listed in good condition, Wade said.

The container held less than a gallon of the chemical, which is corrosive and flammable, authorities say. The spill only affected the lab, which is on the fourth floor of the USF science building. It was evacuated, Wade said.

A hazardous materials team using chemical monitoring devices has confirmed the building is safe, Wade said.

## Chemistry Building Explosion

*Battalion Staff News*

COLLEGE STATION: An early morning explosion in the Texas A&M Chemistry Building has prompted further investigation into the incident.

The blast occurred in a 3rd floor laboratory of the building, said Bart Humphreys, the College Station Fire Department (CSFD) public information officer. No one was injured, he said.

Officials have not determined the cause of the explosion.

"We know there were several processes going on in the lab that were usually put away in the evening," Humphreys said. "We will look into that, but as of now the cause is undetermined."

Two people had been sent in to investigate the laboratory and reported extensive damage to the area, Humphreys said.

"There are reports of vapors still present in the air on the 3rd floor," he said. "We don't want to expose people to chemicals and we don't want to expose the public either."

A graduate student said the explosion had caused a large cylinder, possibly nitrogen, to leave a hole in the lab ceiling.

"In the lab there is a small room with instruments," the student said. "We heard another cylinder broke through the wall and made a pretty large hole."

Low water pressure levels may have prompted officials to check the laboratory, the student said.

The student said they did not believe a student was present in the building at the time of the explosion.

"There would not be a student in the building at that time. A safety person might have been there, but they would be down on the 1st floor and the explosion was up on the 3rd floor."

The building is expected to reopen Friday, with access restricted to the affected areas of the building, according to a press release issued by the University.

## Chemistry fire injures students

***The Orange County Register***

HUNTINGTON BEACH – Two Huntington Beach High School students were seriously burned in a chemistry-class accident on the last day of school.

Brian Cross, 17, and Tyler Haunreiter, 16, were burned by a flash of flames when an experiment using methyl alcohol caused an explosion during a college- prep chemistry class.

Cross, a junior, suffered second- and third-degree burns over 38 percent of his body, including his face, upper arms, chest and neck.

Haunreiter, a sophomore, suffered mostly second-degree burns to his head and face. The boys were being supervised during the experiment, and none of the other approximately 35 students in the class was injured, Principal David Linzey said. "

Neither of the boys was wearing goggles at the time of the accident, but no serious eye injuries were suffered, said Dr. A. Richard Grossman, medical director at the Grossman Burn Center in Santa Ana, where the boys are being treated.

Both are expected to recover.

Linzey said he thinks all the proper precautions were taken in teacher Tascha Thayer's class but declined to discuss accident details.

The boys were demonstrating the experiment while other students watched when the explosion occurred. No evacuation was necessary, but counselors were summoned to console students.

Cross was breathing with the help of a respirator and was sedated Friday afternoon. Grossman said doctors would continue to stabilize him over the weekend before operating.

Haunreiter will likely need one surgery and could leave the hospital within a week.

## Sulfuric acid spill causes scare

***University of Nebraska Gateway***

A UNO undergraduate student picked up a 10-pound bottle of sulfuric acid late Monday night as she prepared to dilute the acid for classroom laboratory experiments.

It was then that the bottom of the bottle broke off, perhaps due to an impurity in the container, and spilled the acid all over the counter where the student was working, said James Carroll, chair of the Department of Chemistry.

"She almost immediately realized the severity of the problem," Carroll said.

The student rushed across the hall to the classroom where Carroll was teaching a general chemistry laboratory section. She then clearly explained the problem, and Carroll took immediate action.

Sulfuric acid, H2SO4, is an extremely corrosive, colorless, odorless liquid commonly used in lead-acid car batteries among many other industrial applications.

After assessing the situation, Carroll took the student to an emergency shower in the laboratory and held her under the cold water while using sodium bicarbonate - baking soda - to neutralize the acid.

Campus Security arrived quickly, Carroll said, and a student in his class called emergency services. Minutes later, Omaha Fire and Rescue responded to the Durham Science Center.

After the student was safely in the hands of emergency medical technicians, Carroll said he began to clean up the acid spill out of concern that the sulfuric acid and the water from the emergency shower would find a hole in the floor and trickle downstairs.

Carroll's efforts to clean up the spill caused some initial tension with the firefighters, he said, because they didn't want him to make the situation worse. Once a hazardous materials team arrived, however, the cleanup process got finished quickly.

The damage to the chemical stockroom where the student was working was minimal, Carroll said. While there was a fair amount of corrosive damage, the counter where the spill occurred is in a fume hood designed to withstand harsh chemical spills and the floor is made of concrete.

While smaller accidents are somewhat common, Carroll said, accidents of this scale are unusual. Nevertheless, student workers receive additional safety training to prepare them for incidents like Monday's acid spill.

"An accident of this magnitude is very freaky," Carroll said. "It happens when you're present once or twice in your career."

## Tufts U. Is Handed Small Fine for Lab Accident Involving Deadly Toxin

### The Chronicle of Higher Learning

GRAFTON, MA: Tufts University has been fined $5,625 for an accident in which laboratory workers could have been exposed to a small amount of botulinum toxin, which is so lethal that a millionth of a gram may be enough to kill a person.

No one fell ill as a result of the accident, which took place at the university's veterinary school, according to the Worcester Telegram & Gazette, a Massachusetts newspaper.

The fine was imposed by the U.S. Labor Department's Occupational Safety and Health Administration.

The agency criticized the school for providing inadequate equipment and insufficient training for lab workers to deal with emergencies.

The university said it had improved lab equipment, training, and procedures.

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## Lab accident leaves student uninjured

### The Shorthorn

ARLINGTON, TX: A nursing junior says a teaching assistant prevented him from using an eyewash station after exposure to chemicals in a Life Science lab. He says his safety was put at risk because the assistant did not want to risk flooding the lab.

The lab supervisor says the chemicals used in the lab experiment were harmless and that the incident was "hyped up."

The student, said he accidentally dropped a bottle of crystal violet stain used to make bacteria visible under a microscope, and the chemical — indelible but not toxic — sloshed in his face.

"The chemical splashed all over my face — it got into my hair, my eyes, my mouth. And to top it off, my shirt was ruined," Green said. When helped by friends to an eye-flushing station, Green said the teaching assistant interceded and directed him out the lab door into the hall toward a drinking water fountain.

The violet stain is harmless beyond Green's purple-splotched face, and the color should fade in "two to three days."

Nevertheless, it could have been injurious if it had been a different chemical and the assistant had reacted the same way.

The student said, "It could have been hydrochloric acid."

## FIGHTING LAB FIRES

### Chemical and Engineering News

Friday evening, April 8, should have been routine for the chemistry graduate students finishing up a day's work in professor Robert S. Coleman's lab at Ohio State University's (OSU) Newman-Wolfrom Laboratory building. Some students were at the bench; others were helping to unload a shipment of hexane into a solvent storage cabinet.

No one could have predicted that, by nightfall, a tremendous explosion and fire would render the lab a smoldering ruin and that only quick-thinking action by the students would mean that they escaped the lab with their lives.

The lab was, in fact, completely destroyed, including all of the research, lab notes, and other work by Coleman and his students. The Coleman group studies antitumor agents, including the bacterial agents azinomycins A and B.

An adjacent lab was also damaged, and the three-alarm blaze took firefighters from several Columbus, Ohio, area fire stations more than an hour to extinguish.

In the weeks since the incident, Coleman and his colleagues have pored over the details and tried to pinpoint exactly what happened in the lab that evening and how the explosion and fire might have been prevented. They have met with officials from the Columbus Division of Fire (CDF) to review the case and to determine how to work together better in the future.

Coleman contacted Chemical & Engineering News (C&EN) about the incident because it "could happen to anyone who stores large volumes of solvents and because the accident could have easily resulted in the loss of life. I believe it is important to report the details of accidents and fires for analysis and as a way to inform and educate other chemists."

UNFORTUNATELY, dangerous explosions, fires, and other mishaps like the OSU incident are not uncommon for schools and other academic institutions, lab safety experts say. Many states, including Ohio, have adopted lab safety regulations from the federal Occupational Safety & Health Administration (OSHA), yet preventable accidents that maim and kill people continue to happen, sometimes with alarming frequency.

Coleman says it is often too expensive to fully implement safety regulations in academia.

Schools have a 10 to 50 times greater frequency of accidents than does the chemical industry, lab safety expert James A. Kaufman says. "It's 100 to 500 times greater than in places like Dow and DuPont," he adds. "I learned more about safety in my first day at Dow than I had in 25 years at school."

Kaufman, now retired from academia and industry, is president and chief executive officer of the Natick, Mass.-based Laboratory Safety Institute. The LSI website (www.labsafety.org) includes a free downloadable brochure on lab safety guidelines. Kaufman conducts workshops and seminars on lab safety year-round at colleges and universities nationwide.

At OSU, Kaufman says, "they were lucky." He says academics are often unwilling to follow rigorous safety protocols established by someone else because it's just not part of the culture. For graduate students, he says the situation is even worse.

"Ninety-five percent of the graduate students I have polled said they would not report a safety hazard" because they fear reprisals from faculty or staff, Kaufman recounted.

But Kaufman believes this difficult situation can change and that accidents and injuries can be prevented with greater awareness of lab safety issues and knowledge of simple but effective procedures. More frequent lab safety inspections is one of the easiest measures to establish, he says.

"When I talk to people about lab safety," says Michael J. Halligan, associate director for environmental health and safety at the University of Utah, "I tell them it almost always comes back to paying attention to proper procedure."

For example, Halligan says, people working in labs should never reuse copper tubing. In an accident at Utah, he says, copper tubing was reused for a laboratory hydrogen line, and it was run next to an electrical switch. A pinhole leak in the copper pipe led to an explosion and fire that could have been prevented if someone had just spent a few dollars for new tubing.

Halligan says it's probably true that academic labs have more accidents than industrial labs, but they tend to be smaller scale. Academic labs seldom work with the quantity of materials or scale of processes that are common in industrial lab work. And below a certain magnitude, accidents at academic labs do not have to be reported to state or federal agencies.

General security of laboratory buildings is a big topic right now, he continues, especially since the terrorist attacks of Sept. 11, 2001. He can give few details--another security precaution--but he says at the University of Utah and many other institutions security is often about controlling access. Key card locks for laboratories are becoming commonplace, he says, and they have the added benefit of documenting who is entering and exiting university buildings.

OSU officials estimate that 90% of their labs are in compliance with OSHA regulations. What's more, OSU graduate students are required to take a course in lab safety. In fact, Coleman and others say it is that training that helped prevent serious injury in the April 8 incident.

Still, OSU officials concede that greater vigilance, including more routine inspections of labs and lab equipment, might have prevented the incident altogether.

The OSU students recount what happened on April 8. Both students agreed to speak with C&EN on the condition that they remain anonymous.

"I was loading solvent bottles to the top shelf" of a solvent storage cabinet, the first student explains. "I loaded 12 bottles, and as I put the 12th bottle up, the shelf collapsed. There were large amounts of hexane on the floor, and my jeans were soaked.

"This has happened before," he continues, "and it's not something where you get too alarmed. I was more concerned about breathing the vapors, and I noticed I had a small cut on my arm. Within five minutes, the explosion occurred."

"We were unpacking shipments from Fisher [Scientific]," says another student, telling the story from her perspective. "There were 10 to 12 bottles of hexane.

"We were getting ready to leave and [the first student] offered to help unload the shipment," she continues. "When I came back with a cart, the shelf had broken and his arm was cut. I said, 'Why don't we all go down to the group room?' "

And with that, the 11 students left the lab--especially, they say, as the fumes from the hexane were becoming overpowering.

As she was going to call Coleman, the second student says, "I saw [the first student] run out of the lab yelling fire. I saw flames lick out from under the door. I could hear it as each bottle started exploding."

"We had put out a number of other fires in the lab," the first student says. "This was such a large explosion that we didn't even bother to go back to the lab."

THE STUDENTS used their cell phones to dial 911 and Coleman. He rushed to the lab from another part of the campus, making it in time to greet firefighters who were responding to the scene.

"We were met by people coming out of the building as well as by Dr. Coleman," says CDF Battalion Chief Kevin M. O'Connor, one of the first responders on the scene. "Coleman advised us as to what was in the lab--40-plus liters of hexane."

Everyone who was there says it was a chaotic scene of some 20 fire trucks and equipment. With Coleman's information about all of the chemicals that were in the lab, firefighters switched from the water they were initially using, to dry powder extinguisher, and finally to chemical foam, which eventually put out the blaze.

Total damage estimates range from $200,000 to $300,000.

"This was a big deal," O'Connor says. "We had approximately 84 firefighting personnel at the fire, and that's probably a low number. A lot of people did the right thing, especially immediate evacuation of the lab."

In addition to the student who cut his arm, several firefighters required treatment, for inhalation of smoke and/or chemical fumes from the fire. Both OSU and CDF officials say all injuries were minor.

The explosion could have been triggered by any number of ignition sources, Coleman says, including static electricity or a spark from a motor or switch. One preventive solution, he adds, might be to outfit the labs with an emergency power-off switch so that all electricity can be killed in a lab whenever there is a solvent or other flammable liquids spill.

The solvent storage cabinet is another focus of attention. Coleman says that, although it was properly vented, it was close to a freezer and probably should not have been.

More troubling is the fact that "somebody put the wrong shelves in the cabinet," says John W. Herrington, OSU chemistry department coordinator of chemical safety. The cabinet was by manufacturer Eagle, he explains, but the shelves had been replaced with those made by Justrite.

"The products we make are really only made for our cabinets," says Joe Eddy, a marketing manager for Eagle. "There are differences."

Coleman and Herrington agree that with routine inspections somebody might have spotted the unstable shelves.

Halligan says its common in academic labs for graduate students and others to just try to make things work. "We call them 'the weekend carpenters,' " he says.

For now, "we were tremendously lucky that Dr. Coleman was on the scene," O'Connor says, crediting the professor for his knowledge of what was in the lab so that firefighters knew they could safely go into the building and extinguish the blaze. Otherwise, he says, "we would have left the fire to burn."

## Bad Chemistry

### WHDHTV 7News

When Ellie Goldberg of Newton toured her children's high school she was shocked at what she saw in the chemistry lab.

"They could blow up or start a fire at any minute, and that could hurt my children," concerned mother Ellie Goldberg said.

"There were very old chemicals, there were unlabeled chemicals, there were all sorts of hazards," Goldberg said.

These hazards prompted her to call the state inspector who agreed that these conditions could cause "unexpected fires, explosions, or release of toxic fumes and gasses into the occupied spaces of the school."

"It was a very serious threat. My kids were in the building and I wanted them safe," Goldberg said.

Across Massachusetts, safety experts say middle and high school science labs are overflowing with dangerous chemicals that have the potential to ignite, burn and even explode.

"They can be toxic, they can be flammable. They can be corrosive and they can be reactive," Jim Kaufman of the Laboratory Safety Institute said.

Last month in Exeter, New Hampshire, several students had to be hospitalized after a chemical spill in the classroom.

At an Everett catholic high school, an old, unstable chemical had to be detonated by the bomb squad.

Last year in California a 16-year-old stole bomb-making materials intending to blow up the school.

"The number one concern is keeping the door locked, so somebody doesn't help themselves to something," Kaufman said.

"I think it's really important that people think about what's behind those locked doors, what's inside those chemical storage closets, but experts don't blame the schools themselves. Properly disposing of these chemicals can cost thousands of dollars; money not in their budget," Natick High School Science Department Chair Kathi Brown said.

"The disposal of chemicals can be a challenge."

So to help, the state has begun a new program that matches schools with local businesses that can help with chemical management.

Natick High is one of the pilot schools being mentored by Boston Scientific.

"We're managing labs all the time and we should be able to transfer that expertise into a school system," Boston Scientific Environmental Health and Safety Manager Roy Barker said.

Of course, the number of mentor volunteers limits the program. Right now there are only three schools in the program, and the need is much greater.

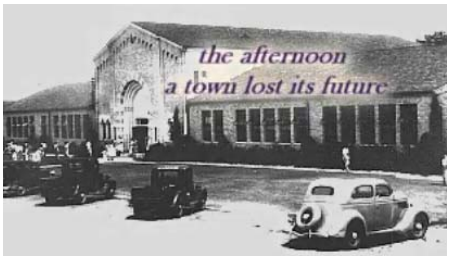
"There's probably a good 200 schools that also can use this support," Director of Massachusetts Office of Technical Assistance Paul Richard said.

As for Goldberg, the state made her kids school clean up their act. She suggests other parents insist their communities' cleanup the labs as well to prevent a case of bad chemistry.

# Texas rocked by worst-ever school disaster

## Kilgore News Herald

While this 1937 natural gas explosion at a school in Kilgore, Texas was not related to an accident in the lab it may be the worst HazMat school disaster in U.S. history with nearly 300 fatalities reported




The London School Reunion is celebrated semi-annually so the lives of the many lost in one tragic day will never be forgotten.

On March 18, 1937 - 70 years ago - London School exploded when leaking natural gas leak collected under the building and was accidentally ignited.

The disaster killed nearly three hundred students and teachers, making it the worst catastrophe to take place in a United States school building.

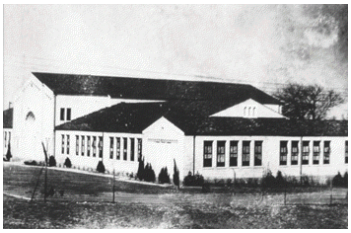
London school was called one of the richest schools in the nation. The oilboom had boosted local economy and educational spending had grown with it.

The school was constructed of concrete and steel at a cost of $1 million and offered its students the finest and most advanced facility in East Texas education with a fully operational chemistry lab and many other amenities.

London School was one of the first to play nighttime football as the first Texas high school with electric stadium lights.

According to John Davidson, London Museum director, the school was built on sloping ground. A large crawl space was contained beneath the structure and school board officials had overridden the original architect's plans for a boiler and steam distribution system, opting instead to install 72 gas heaters throughout the building.

Davidson said early in 1937, the school board, in order to save money, canceled their natural gas contract and had plumbers install a tap into Parade Gasoline Company's residue gas line. While not authorized by local oil companies, the practice of tapping into residue lines was widespread in the area. Oil companies turned a blind eye because natural gas extracted with oil was considered waste and simply flared off.



Classes had been cancelled for the next day, Friday, March 19 to allow students to participate in a scholastic and athletic competition. First through fourth grade students were let out early while a Parent-Teacher Association meeting was being held in the school's gymnasium approximately 100 feet from the main building.


Undetected, odorless natural gas had been leaking from the school's tap on Parade's residue line and built up inside the 64,000-square-foot crawlspace.

According to a London Museum timeline, at 3:17 p.m. Lemmie R. Butler, instructor of manual training, turned on an electric sander to test a recent repair job. The machine's switch is believed to have caused a spark which ignited the gas.

Davidson said reports from witnesses stated the walls of the school bulged, and the roof rose up from the building then crashed down collapsing sections of the school. According to a 1937 newsreel a 2-ton block, thrown from the building, crashed into a parked car where a baby lay sleeping.

"John Dial, a student in Mrs. Butler's room, feels caught in the middle of a flash of lightning," reads the timeline. "The building has exploded."

The timeline serves as a witness to those who still ask questions and lists the actions of many who might have perished if not for circumstances: A student, Bill Grigg, left study hall mere minutes before all 65 remaining were killed; Bill Thompson, a survivor, had traded seats with a girl, Ethyl Dorsey, she dies; and, F.F. Waggoner, principal, was heading back to his office where two students were studying, still safe out side when the blast occurred, Waggoner survives and the two students were killed.

The timeline progress three minutes to 3:20 p.m. when calls are placed to the Central Telephone Office and a carload of injured start for Overton, driven by C.R. Sory, band director; and, Mr. Shaw, school superintendent is found staggering and clutching a head wound and crying "Oh my God, those poor children."

By 3:30 p.m. oilfield worked have rushed to the school a find mothers from the PTA meeting tearing frantically at the rubble with their bare hands.

At 3:40 p.m. Sory bursts into the Overton Western Union Office shouting "The London School is blown to bits, hundreds killed and injured, get help!" while back at the school Mose H. Marvil, Henderson mayor, arrives on the scene then rushes back to Henderson to set up relief head quarters at the chamber of commerce office.

At 4:15 p.m. President Roosevelt sent a message from Warm Springs, GA.

"I am appalled by the news of the disaster at New London, Texas in which hundreds of school children lost their lives. I am shocked and can only hope that further information will lessen degree of this tragedy," Roosevelt wrote. "I have asked the Red Cross and all government agencies to stand by and render every assistance in their power to the community onto which this tragedy has come."

Over the next few hours, aid poured in from all over. James V. Allred, Texas governor, dispatched Texas Rangers, highway patrol, and the Texas National Guard; thirty doctors, one hundred nurses, and twenty five embalmers arrived from Dallas, Fort Worth and Witchita Falls; and, airmen aboard five planes came from Barksdale Field with supplies and medical personnel, deputy sheriffs, the American Legion, Salvation Army and even Boy Scouts took part in rescue and recovery efforts.

Approximately 700 students and teachers were in the building at the time of the explosion. Only about 130 escaped without serious injury.

Most bodies were either burned beyond recognition, or blown into pieces. One mother reportedly had a heart attack and died when she found her daughter had died and only part of her face, her chin and a couple of bones were recovered.

Another boy, Travis Dial, was identified merely by the presence of the pull string from his favorite top in his jeans pocket. Rescuers and oilfield workers hustled through night clearing the entire site of 4 million pounds of debris.

Makeshift morgues and infirmaries set up at stores, gas stations and offices in neighboring Henderson, Overton, Kilgore and as far away as Tyler and Longview housed the enormous number of bodies. Family cars and delivery trucks served as makeshift hearses and ambulances to transport the dead and wounded.

Mother Frances Hospital, scheduled to open the next day, opened immediately and dedication ceremonies were canceled indefinitely

Walter Cronkite was among reporters in New London, on one of his first assignments for United Press.

Cronkite went on to cover World War II and the Nuremberg trials, he was quoted as saying decades later, "I did nothing in my studies nor in my life to prepare me for a story of the magnitude of that New London tragedy, nor has any story since that awful day equaled it."

Adolf Hitler, German Reichs Chancellor, paid his respects by telegram. Davidson said many people come to London Museum just to see the copy of this correspondence on display among messages from Eleanor Roosevelt and from locations like South Carolina and New Orleans and as far away as Japan, Spain, France, Warsaw and Belgrade.

Classes resumed ten days later in tents and building brought in by oil companies. A new school was completed in 1939 on the property, directly in front of the location of the destroyed school.

Davidson said experts from the United States Bureau of Mines concluded the connection to the residue gas line had been faulty and allowed the gas to leak into the school. Since natural gas is invisible and odorless, the leak was not noticed.

Numerpus lawsuits were filed, though few made it to the courtoom. Those that did were dismissed for lack of evidence.

The school's superintendent, Arthur Shaw, who lost a son in the blast was forced to resign.

The majority of the victims of the explosion are buried at Pleasant Hill Cemetery, near New London.

In an effort to reduce the damage of future leaks, Texas legislature mandated that Mercaptan be added to natural gas, giving the gas the odor it has today.

Over the years, the New London School explosion received relatively little attention given the magnitude of the event. Explanations for this are speculative, but most center around residents' unwillingness to discuss the tragedy.

As of 2009, the New London School Explosion stands as the deadliest school disaster in American history and the third deadliest disaster in the history of Texas, after the Galveston Hurricane of 1900, and the 1947 Texas City Disaster.

As the first article indicated, the Chemical Safety Board will be investigating the explosion at the Texas Tech laboratory.

"We see serious accidents in high school and university labs every year, including a tragic fatality a year ago at UCLA," said CSB Chairman John Bresland. "I believe it is time to begin examining these accidents to see if they can be prevented through the kind of rigorous safety management systems that we and others have advocated in industrial settings."

Mr. Bresland said the CSB planned to collect information on several laboratory accidents for a future study.

The CSB is an independent federal agency charged with investigating serious chemical accidents. The agency's board members are appointed by the president and confirmed by the Senate. CSB investigations look into all aspects of chemical accidents, including physical causes such as equipment failure as well as inadequacies in regulations, industry standards, and safety management systems.

The Board does not issue citations or fines but does make safety recommendations to plants, industry organizations, labor groups, and regulatory agencies such as OSHA and EPA. Visit the CSB's website at www.csb.gov

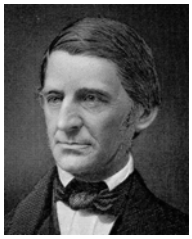
# *You're Lucky You Got This !!*

**© 2010 Frederick J. Cowie, Ph.D. fredcowie@aol.com fredcowie.com 406-431-3531**

Everyone's life has tragedies. Some have many. Some find the good in the bad, the comedy in the tragedy. Are they lucky to find the good in the bad? Let's see what wise folks say about luck:

- Ralph Waldo Emerson: Shallow men believe in luck. Strong men believe in cause and effect.
- Thomas Hardy: Some folk want their luck buttered.
- Sam Goldwyn: The harder I work, the luckier I get.
- Armand Hammer: When I work fourteen hours a day, seven days a week, I get lucky.
- Louis Pasteur: Luck favors the mind that is prepared.
- Bill Garstka: Finding fossils is not luck. You have to have a search image.
- Jean Cocteau: We must believe in luck. For how else can we explain the success of those we don't like?

So if you want to be lucky, work hard and work well—and your enemies will say you're lucky!






**HAS YOUR LEPC:**

- Established a permanent address for facilities, the SERC, and EPA to mail required forms and information;
- Notified the SERC of any changes to the LEPC structure, especially a change in the chair or address;
- Provided EPCRA training to emergency responders, specifically local fire departments who often can provide information to facilities during fire inspections and police departments who respond to haz-mat incidents?
- Established a 24-hour manned emergency phone number (i.e., sheriff's office, 911, fire department) for facilities to make release notifications -- an answering machine is not sufficient



## Region 6 Emergency Notification Numbers

| | |
|---|---|
| **Arkansas Dept. of Emergency Management** | **800-322-4012** |
| **Louisiana State Police** | **877-925-6595** |
| **New Mexico State Police** | **505-827-9126** |
| **Oklahoma Dept. of Environmental Quality** | **800-522-0206** |
| **Texas Environmental Hotline** | **800-832-8224** |
| ********** | |
| **National Response Center** | **800-424-8802** |
| **EPA Region 6** | **866-372-7745** |
| **CHEMTREC** | **800-424-9300** |