

Summary of Chemical Exposure Incidents

Between August and December of 2006 there were five incidents involving hazardous chemicals that resulted in exposure to UT Southwestern employees. Each of the incidents provides useful information to the university community. Key points are noted in bold below each incident.

Incident one

Chemical Information

The Material Safety Data Sheet states that phenol is “VERY TOXIC” by exposure routes of inhalation, dermal contact and ingestion. It also states that phenol is “Readily Absorbed through Skin” and “causes burns”.

Incident Report

Environmental Health and Safety (EH&S) personnel were contacted and advised that there was a chemical spill. EH&S personnel immediately responded to the location, where an employee had been contaminated by the chemical. EH&S assisted the employee in completing decontamination using the safety shower.

It was determined that the employee exposure occurred during the transfer of 89% phenol from a 55-gallon drum to a smaller pail. The employee was using an electric pump to transfer the material and during the transfer process, a hose came free from the pump, causing the material to spray onto the employee and the floor.

The employee was transported to Parkland Hospital Emergency Room by EMS.

The employee was not wearing Personal Protective Equipment other than latex gloves, increasing the level of exposure to the chemical. The flushing of the chemical may have been delayed.

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Incident two

Chemical Information

Getinge Chamber Cleaner Schedule 7 is a multi-purpose acidic cleaner/descaler used to remove water scale and mineral deposits from sterilizers, utensil washers and cart washers. Also for use on carts and other metal objects that have become discolored. The active ingredient in this product is Phosphoric Acid, 12%.

Pure Bright Disinfectant Bleach is a 5.4% Sodium Hypochlorite solution. Used by the staff to disinfect, and remove stains and scale from glassware.

Incident Report

Two employees were attempting to remove hard-water deposits from an Erlenmeyer flask using bleach. When the bleach failed to remove the deposits, the employees added a 12% phosphoric acid cleaner (Chamber Cleaner) to the bleach. When the materials mixed, chlorine gas was generated, and quickly shot from the flask, in the direction of the two employees. Both employees inhaled the chlorine vapors, causing immediate respiratory discomfort.

The Manager was notified and Dallas EMS was called. Oxygen was administered to the employees by EMS. Employees were transferred by EMS for medical evaluation.

EH&S staff cleaned up the spilled material and departed the site.

All employees working with chemicals should be aware of potential incompatibilities. This was an example of the incompatibility of acid and bleach.

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Incident three

Chemical Information:

Trifluoroacetic acid is highly corrosive and causes burns to any area of contact. Trifluoroacetic acid is used in the preparation of biologically active compounds for GC analysis. The “thiol” compound has a strong sulfur smell and rapidly disperses in air.

Incident Report

The employee was preparing samples in the fume hood. While moving a container of Trifluoroacetic Acid and Thiol mixture, 25 mls of the solution spilled. The solution dripped from the front of the chemical hood and onto the employees’ pants at the upper thigh, and onto the floor.

The employee immediately called for assistance and went to the restroom and began rinsing the contact area with water. The employee flushed the contact area for approximately 15 minutes and was treated at St. Paul University Hospital, Occupational Health, for a chemical burn.

The laboratory staff was aware of the hazards of the chemical and responded quickly and appropriately to flush the area. The employee was wearing a lab coat but it apparently was not closed, allowing the employee’s legs to be unprotected.

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Incident four

Chemical Information

Ethylenediamine and Potassium Hydride, both corrosive

Incident Report

Occupational Health contacted the main number of EH&S to request assistance with a patient who presented himself to the Emergency Room at St. Paul with chemical burns.

EH&S went to the lab, where they were able to ascertain the identity of the chemicals used in the experiment. Ethylenediamine and potassium hydride caused forehead and ear burns to the researcher when a strong reaction occurred in the fume hood.

The worker was burned while performing an experiment in the hood of his lab. Before being taken to the Emergency Room by a coworker, the worker flushed the affected area with water in for at least fifteen minutes. The individual was wearing safety glasses, N95 respirator, gloves, and lab coat when the reaction exploded.

The eye protection use of the fume hood likely prevented more severe injury, but a face shield would have been better protection.

Incident five

Chemical Information

A “Piranha Mixture”, comprising 70% sulphuric acid and 30% hydrogen peroxide.

Incident Report

A 70% sulphuric acid and 30% hydrogen peroxide mixture (“Piranha Acid”) was stored on the floor, underneath an equipment table. An employee apparently bumped one container with her foot as she stood at the worktable and the containers cracked and spilled. The total amount of material spilled was 2 liters.

The lab staff ensured that the employee immediately entered the safety shower and then escorted her to the Emergency Room. Lab staff contained the spill with spill pads and booms.

The lab and EH&S are studying alternatives to the acid mixture.

The immediate removal of contaminated clothing and prompt use of the safety shower resulted in minimal injury to the individual. Proper storage and handling of highly hazardous chemicals is critical.