Reed College Occupational Health and Safety Committee Presents

Your Health

Your Safety

Our Concern

It's the Bomb: Safety in the Event of an Explosion

Most explosions involve two types of risks: blast-related and those associated with structural collapse. Blasts are tough, as they impact almost every part of the body. The structural threats aren't so good either: collapsing buildings and falling debris can injure, kill, and trap people on-site. The good news is that there are ways to limit the damage.

Preparation

It seems very unlikely that Reed will experience any type of serious explosion. However, the increadible degree of damage to life and campus potentially rendered by an explosion merit preparation even in this most unlikely senario.

Bombs Away: For any serious emergency, there should be a prepared emergency kit nearby and an established evacuation plan. If you do find yourself in the midst of an explosion, there will be a lot of unknowns. Worry about all that later. Your highest priority is to protect yourself and the people around you.

- Shield yourself from the blast behind a solid object or under a desk/sturdy table.
- Duck and cover yourself from shattering windows and other falling debris.
- After the blast, if there is no threat of radioactivity and/or the building is damaged, leave the building and head for your safe meeting place ASAP. Do not use elevators. Bring the emergency kit if time permits.
- While exiting, check for fire and other hazards. If there is a fire, exit the building immediately—crawl through the smoke, feel doors with the back of your hand before entering them, and use a wet cloth to cover your nose and mouth.
- If you are trapped in debris, try to stay calm. Avoid unnecessary movement. Cover your nose and mouth with anything available, preferably tight-weave cotton. Use a flashlight to signal your location. Tap on a pipe or wall to get the attention of rescuers. Sound a whistle, if you've got one on hand. Shout only as a last resort—it can cause you to breathe in dangerous amounts of dust.

Emergency Provisions: An emergency kit should include:

- Food & water. Store at least 3 day's worth of food and water per person; 1 gallon of water per person per day.
- Clean air. Equip yourselves with nose and mouth protection, i.e. masks or a cotton t-shirt. Pack plastic sheeting, duct tape, and scissors to make a quick hold-in-place shelter. This shelter is key in creating an air space free from dust and toxins. You can use a HEPA (high efficiency particulate air) filter to purify the air in your shelter.
- First-aid kit.
- Communication. A battery-powered radio, flashlight, batteries, a whistle, and a cell phone.
- Extra clothing & bedding.
- Cash or traveler's checks.
- Personal hygiene items.
- Fire extinguisher & fire blanket.
- Tools. Standard hand tools to turn off appliances and gas lines; shovels and axes to help people trapped in debris and clear rubble.
- Garbage bags & ties for personal sanitation.

Lab Safety

Some chemicals that you may encounter in lab are volitile just as they are. These should be marked in yellow for Reactivity. This classification system rates chemicals from "Stable" to "May Detonate". Follow lab procedure for such dangerous materials.

Even using proper precautions for reactive materials, explosions can occur in other ways. Never heat a closed system or conduct a reaction in a closed system unless specifically directed. Before beginning any distillation or chemical reaction, make sure that they system is vented. The results of an explosion are flying glass and spattered chemicals, often both hot and corrosive.

Explosive Facts

A blast intensity of 1psi (pounds per square inch) shatters windows; 3psi collapses residential structures; 5psi collapses most buildings; 10psi collapses reinforced concrete.

There have been 11 US nuclear bombs lost and never recovered since 1997.

Upon detonation, a nuclear bomb produces temperatures up to 18,000,000 °F—comparable to the temperature inside the sun.

US weapons activities have generated 104,000,000 cubic meters of radioactive waste.

Bomb Threats

Ninety-eight percent of bomb threats are false. However, every bomb threat must be taken seriously. Have someone notify the police immediately, while you keep the bomb threat caller on the line. Try to collect the following information:

- Where is the bomb? Get a precise description.
- When will the bomb detonate?
- What does the bomb look like?
- Who is calling? Name, address, current location, and telephone number.
- What telephone number are they calling from? Check caller-ID or ask.
- Will the caller remain on the line?

Gathering this information will potentially help police and the college's safety officers determine the validity of the threat and speed up the process of locating the suspected bomb. Keeping the caller on the line until an expert shows up is the single most helpful move you can take if you've been contacted with a bomb threat.

"Risk of Explosion" public notice. Heed the signs!

New international standard warning label for materials and chemicals with explosion risks.

Atomic Warfare

With the cold war long over (and North Korea's nuclear program feeling less threatening by the year), the risk that we would be involved in atomic warefare is increadibly low. But, more information never hurt - and atomic bombs are interesting.

Nuclear bombs are a triple threat—they create a huge blast impact, release enormous amounts of fast-traveling heat energy, and produce radioactive fall-out. Although your first instinct may be to run in the opposite direction of the nearest mushroom cloud, you may think twice once you understand exactly what "The Bomb" entails.

Heat Wave: After the initial impact, thermal radiation enters the scene. This heat energy travels far and wide, rapidly heating up exposed surfaces and trailing firestorms in its wake. A 20-megaton bomb can cause third degree burns more than 40km away from the blast epicenter. Translation—get underground and stay there when that cloud appears on the horizon.

Fallout: After the blast and burns, the last and most notorious effect of the A-bomb rears its ugly head—radioactive contamination. As we all know, exposure to radiation can get a person a million kinds of sick. Protect yourself from fallout by moving as far away from the drop zone as possible. Find a relatively undamaged building, go as far underground as you can, and then shut all windows, doors, and vents. If you think you have been exposed to radiation, remove clothing and wash right away. Taking iodine tablets is an effective defense against lower doses of radiation. Your boday absorbs the pills' non-radioactive idodine and prevents harmful radioactive iodine from lodging in your thyroid.

SOURCES:

www.fema.gov/areyouready/explosions.shtm
www.ki4u.com/guide.htm
www.dartmouth.edu/~chemlab/info/safety/hazards.html