

Do not allow your relief device vents to be a hazard March 2021



Figure 1. Process vapors leaking from manway



Figure 2. Process vapors released at a low level near the process area

On April 12, 2004, a company in Dalton Georgia, USA was contracted to make triallyl cyanurate. A runaway reaction occurred, and flammable and toxic allyl alcohol and allyl chloride were released to the atmosphere. Some material was released through a poorly sealed manway (Figure 1) and more through the rupture disc vent which discharged near the base of the reactor (Figure 2). The release forced the evacuation of over 200 families in the surrounding community.

One worker received chemical burns and 154 people including 15 emergency responders had to be decontaminated and treated for chemical exposure. (Sources: CSB report 2004-09-I-GA. Figures from the CSB video "Reactive Hazards")

Another company in the U.S. received a regulatory inspection. They were cited for not venting process relief valves to a safe location. While the vents discharged outdoors, the release point was directly over an exit from the process building. An employee exiting during a relief discharge could have walked right into a cloud of process materials.

Did You Know?

1. Relief devices, whether used in process or utility service need to vent to a safe location. That can vary by the material being relieved.
2. Poorly sealed manways can release hazardous materials and expose workers in the process area. The relief device should be the only release point for overpressure.
3. Potential emissions from relief devices should be known and documented as critical safety and environmental data.
4. The safe location for a relief discharge needs to be in an area where volatile materials can disperse to the atmosphere or where liquids can be contained.
5. When vented materials collect, they can result in a cloud of flammable or toxic materials that could ignite or expose worker or the community.
6. Changes to other processes or equipment in the area need to be reviewed for any impacts on the dispersion of relief emissions.

What Can You Do?

1. Search for relief device vents during your rounds in the unit. When you see one look for:
 - a. Is it labelled as a relief line ?
 - b. Could it expose someone?
 - c. Is there other equipment around it that could trap flammable or toxic vapors?
 - d. If the answer to any of these is "Yes" report it to your supervisor.
2. If there are process or relief vents at a low level that could expose someone, report these too.
3. Ensure all openings (manways, charge ports, etc.) on equipment and piping flanges are properly tightened, so systems vent only as designed.
4. During MOC reviews, ask for details of a relief discharge location. The relief location needs to allow dispersion of gases, vapors and/or capture of liquids.

Relief devices need to vent to a safe location. Verify that the locations are actually safe.