

# Autoclave Explosions

## Unexplained Autoclave Explosion

One morning there was a sudden blast which had laboratory personnel headed for the door. Before too long it was determined that an autoclave had ruptured with incredibly violent force. The room was trashed, broken water connections were streaming and electrical panels were severely damaged. Racks of test tubes, stacks of culture media and trays of used needles awaiting sterilization prior to disposal were splattered across the room by the tremendous concussion. Metal shrapnel penetrated the walls. A few minutes sooner or later and those projectiles could have easily struck a lab worker. Luckily, the room was unoccupied at the critical moment.

EHS shut off electrical power, stopped the water flow and quickly surveyed the seriousness of the situation. Next, they verified through visual smoke testing that hazardous biological materials had not blown into the corridors, contaminated building occupants, or escaped to the outside environment. Two things seemed to have prevented this outcome. First, when the 80 lb sterilizer door blew off its hinges and slammed against the wall, it hit the back of well anchored electrical panels which kept it from sailing right through to the corridor. If that was luck, the second advantage was the result of specific design. The autoclave room was independently exhausted, which prevented airborne materials from spreading throughout the building ventilation system. Another concern was the collection of debris, biological waste materials and flood water which covered the floor.

EHS and lab personnel helped estimate possible risks presented by the inventory of likely pathogens. Worst fears were gradually replaced by the carefully considered judgments of some of the country's most knowledgeable professionals.

Although relieved to confirm that human and environmental contamination was prevented by local circumstances, the mess was still extremely hazardous and needed to be cleared as quickly as possible. A clean-up vendor was on the scene before the end of the day. By dawn, eleven drums of contaminated debris were collected from the room - even the contaminated drywall was removed. The only things remaining were three autoclaves and the faint smell of biocide residues.

What caused this catastrophic mechanical failure? Could it happen again elsewhere on campus? Steris was notified and their technicians began inspecting all other steam sterilizers at the facility. All the other units in need of repair and maintenance were identified, but it wasn't possible to determine why the door blew off the ruptured autoclave. An incident of this magnitude calls for serious evaluation. All steam sterilizers are being identified and evaluated. Each unit will be registered with the State and periodic inspections and maintenance will be conducted. This event, as it turned out, rocked the institution in a generally positive way.

---