

## Lab Safety Alert

### Improper hazardous waste disposal



**INCIDENT DATE:** May 2023

**SUBJECT:** Improper hazardous waste disposal

#### BACKGROUND:

A 10 L aqueous acid hazardous waste container was picked up by hazardous waste contractors but did not match any of the items listed in the hazardous waste requisition. The aqueous acid hazardous waste container is a standard container supplied by OHSE and the acidic contents are required to be within a pH range from 2.5 up to 6. However, in this case the liquid contents were fuming and producing brown vapour. The 10 L container was placed under strong ventilation for a week until fuming had ceased before attempting to continue with disposal.

#### INJURIES

There were no injuries from this incident.



#### IMMEDIATE CAUSE

The lab's routine hazardous waste requisition was submitted on time the day before pick up; however, the next day during pick up the 10 L aqueous acid hazardous waste container was added last minute by a researcher that was wrapping up research and cleaning their area. At the time when the 10L container was given to the contractors it did not appear to be fuming but at some point between transporting from the lab to the hazardous waste facility the container was producing fumes. The contents of the container contained a mixture of hydrochloric acid, hydrobromic acid, hydroiodic acid and toxic metal solids. The pH of the solution was never tested before decanting the acid solutions into the 10L container nor was it tested prior giving it to the contractors to ensure the pH was within range.



### LEARNING OUTCOMES

The research group provides lab orientation and training for new lab personnel and hazardous waste disposal routine and containers are included in the orientation. Even though the particular lab personnel that submitted the fuming 10L aqueous acid container had received in lab training when they started, they were in the process of finishing their research and did not plan accordingly their clean up. As a result, they were hasty in cleaning up and combined solutions that should have been kept separate for hazardous waste collection. It is recommended for concentrated acid solutions containing toxic solids to use lab supplied bottles (e.g. empty solvent bottles) and cap with vent release (Circumvent®) caps available from Science Stores free of charge. These hazardous waste bottles should be stored in a ventilated acid cabinet or in a fume hood for short term. Last minute submission of hazardous waste should be avoided and wait until the following week. However, if there is a concerning container to remove from the lab that was not submitted online, email OHSE ([ohs@uvic.ca](mailto:ohs@uvic.ca))

### RECOMMENDATIONS TO PREVENT RECURRENCE

- Test pH of acid before pouring into OHSE supplied aqueous acid (or basic) containers
- Use empty bottles with Circumvent® caps to collect strongly acidic (or basic) solutions
- Avoid last minute submissions of hazardous waste at pick up
- Email OHSE to consult on concerning hazardous waste containers
- Post OHSE handouts on hazardous waste container and disposal protocols in the lab as reminder
- Remind lab personnel to take time and plan accordingly when cleaning up hazardous materials for disposal

More information on hazardous waste disposal protocols:

[https://www.uvic.ca/ohse/assets/docs/haz-waste/master7\\_hazardous-waste-disposal-protocols\\_oct2021.pdf](https://www.uvic.ca/ohse/assets/docs/haz-waste/master7_hazardous-waste-disposal-protocols_oct2021.pdf)

More information on OHSE provided hazardous waste containers:

<https://www.uvic.ca/ohse/assets/docs/haz-waste/hazwasteposter.pdf>

More information on Circumvent® caps:

<https://www.uvic.ca/ohse/assets/docs/caps.pdf>