

Piranha Waste Generation, Collection and Disposal Procedures

There have been three major piranha-related waste incidents and two serious over-pressurization incidents on campus within the past 3 years. This pattern indicates a heightened potential for serious injury to campus researchers and the Division of Research Safety (DRS) chemical waste staff. As a result, increased safety procedures are now required. If these procedures are not followed and an additional incident occurs, DRS will evaluate whether it is safe for their chemical waste staff to continue picking up piranha waste from campus laboratories.

The Principal Investigator (PI) is responsible to develop and document training in the safe use of piranha and emergency (splash/spill) procedures for his or her laboratory. All laboratory users of piranha must receive training prior to use. Laboratories should prohibit working alone in a lab with piranha or piranha waste.

Do not use piranha unless absolutely necessary. Use less hazardous methods if possible – such as an oxygen plasma asher or NoChromix for cleaning glassware.

Piranha Waste Procedures

These procedures must be implemented immediately by all campus labs that generate piranha waste:

1. Do not move piranha waste from the chemical fume hood where it was generated.
2. Prior to collection and storage of the piranha solution, it must be left in an open container inside a chemical fume hood in order to cool down and allow the gases from the solution to dissipate for at least 24 hours.
3. The cooled piranha solution may be transferred into the piranha waste bottle. When transferring make sure no heat is produced or reactions are occurring.

It is important to remember that this used piranha cleaning solution is still concentrated sulfuric acid with an undetermined hydrogen peroxide concentration. Care must be taken not to allow the solution to be mixed with organic solvents, as this will cause a violent reaction and possibly an explosion.

4. Following the transfer, the piranha waste bottle contents must be swirled to achieve agitation (see SWIRLING PROCEDURE below for more information).
5. Do not place caps on piranha waste bottles. Caps will be put on by the DRS chemical waste staff at pickup.
6. Do not fill piranha waste bottles above the waste fill line. (DRS chemical waste staff will supply piranha waste bottles with fill lines beginning March 16, 2009.) Over-filled containers will not be picked up.
7. Maintain a log of all additions to piranha waste bottles including the user name, date, time, amount, concentration (3:1, 5:1, etc), and verification of swirling. (See PIRANHA LOG SHEET below.)
8. Do not keep piranha waste on hand for extended periods of time. The LAST ADDITION to a piranha waste bottle should be no later than 3 months after the first addition in the PIRANHA LOG SHEET.
9. When generating piranha waste, additional swirling (see SWIRLING PROCEDURE below for more information) and wait time is required and must be documented on the PIRANHA LOG SHEET.
10. A trained lab representative is required to sign off on the log sheet and submit it with the chemical waste pickup request.



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USING THE PIRANHA LOG SHEET

Documenting Additions of Piranha Waste

Include the following information for each addition of piranha solution to the piranha waste bottle:

- Date
- Time
- User Name
- Amount added
- Concentration (3:1, 5:1, etc.)
- Verify swirling

Swirling Procedure

Following each addition, the contents of the piranha waste bottle must be swirled to achieve agitation. Stirring with glass rods or stir bars is not recommended since scoring of the container may occur and stir bar coatings may be damaged or removed by piranha solutions.

Following the LAST ADDITION – as with all other additions – the contents of the piranha waste bottle must be swirled. In addition to noting the time and date, personnel performing the agitation should take note of either heat or gas evolved after swirling under REACTION OBSERVED and COMMENTS. After a minimum of 48 hours, the contents should again be swirled and the action documented.

A piranha waste bottle may be considered CLEARED FOR SUBMISSION after the second consecutive agitation with no reaction observed. These consecutive agitations must be separated by a minimum of 48 hours.

Submitting Piranha Waste for Disposal

Once a piranha waste bottle is CLEARED FOR SUBMISSION, a trained lab representative must sign the Piranha Log Sheet to certify that the above steps have been taken and that the waste is safe for pickup. The signed log sheet must be submitted with the waste pickup request. A copy should be kept for the lab and for review by DRS waste staff upon pickup.

Questions?

Contact the Division of Research Safety (333-2755 or [via e-mail at drs@illinois.edu](mailto:drs@illinois.edu)) or visit our web site: <http://www.drs.illinois.edu/>.



