

Biology and Wildlife
STANDARD OPERATING PROCEDURE
Catechol



Location(s): Murie 209, 211

Chemical(s): Catechol (Pyrocatechol), CAS # 120-80-9

Specific Hazards:

- GHS Classification in accordance with 29 CFR 1910 (OSHA HCS):
 - Acute toxicity, oral (category 3), H301
 - Acute toxicity, inhalation (category 4), H33
 - Acute toxicity, dermal (category 3), H311
 - Skin irritation (category 2), H315
 - Serious eye damage (category 1), H318
 - Skin sensitization (category 1), H317
 - Germ cell mutagenicity (category 2), H341
 - Acute aquatic toxicity (category 2), H401
- Danger.
 - Toxic if swallowed or in contact with skin
 - Causes skin irritation
 - May cause an allergic skin reaction
 - Causes serious eye damage
 - Harmful if inhaled
 - Suspected of causing genetic defects
 - Toxic to aquatic life
 - Avoid breathing dust/fume/gas/mist/vapors/spray
 - Wash skin thoroughly after handling; wear appropriate gloves while handling
 - Use in a well-ventilated area. Solid catechol must be handled in a fume hood.
 - Wear appropriate PPE.
 - Do not handle it until all safety precautions have been read and understood.

Contact Information:

Laboratory Supervisor: Patrick Knavel pdknavel@alaska.edu 474-5622

Laboratory Technician: Rosa Villarreal rvillarreal@alaska.edu 474-7205

1. Purchasing:

All chemical orders are placed by the Laboratory Technician once approved by the Laboratory Supervisor.

2. Storage:

JT Baker storage code is white; stored in a locked corrosives cabinet in 211.

3. Authorized personnel:

- All authorized personnel must have completed all required employee and laboratory safety training.
- The Instructor is authorized to train their TAs on the proper preparation, handling, storage and disposal of this material. The instructor may delegate training to the B&W Laboratory Supervisor by making arrangements at least two (2) weeks in advance.
- TAs, once trained, are authorized to prepare solutions and to train and supervise their students.
- Students must be trained in the use of this material in accordance with this SOP before conducting a lab. Students are only permitted to use dilute solutions of this compound; they should not handle concentrated or solid catechol.

4. Training requirements:

The user must demonstrate competency and familiarity regarding the safe handling and use of these materials prior to using them. Training shall include the following:

- Review of this SOP and chemical Safety Data Sheet

5. Use location:

- Murie B&W teaching labs, rooms 209 and 211
- On tables or lab benches isolated from sinks.
- This material shall NOT be used near a sink. In the event of a leak or spill, this material must be contained and may not enter the drain.

6. Personal protective equipment (PPE):

- All personnel are required to wear the following personal protective equipment (PPE) whenever conducting this procedure:
 - Nitrile gloves, thickness of 0.11mm has a breakthrough time of 480 minutes
 - Safety goggles
 - Lab coat, long sleeved
- PPE must be inspected prior to use and replaced if damaged.
- In addition to wearing appropriate PPE, catechol solutions prepared from solid catechol must be prepared in the fume hood to provide adequate respiratory protection.
- PPE must be removed as appropriate to avoid contaminating surfaces and items in the lab or outside of the lab that should not be contaminated. In particular, PPE must be removed before leaving the lab, before handling personal items such as cell phones or laptops, and before moving on to other procedures in the lab. If a subsequent lab procedure also requires gloves, catechol-contaminated gloves must be removed and disposed of appropriately, and fresh gloves must be donned.

7. Spill equipment:

- Inert absorbent material. Paper towels are suitable.
- Waste containers to keep contaminated material separate from trash.

In the event of a spill, follow the directions in section 12, below.

8. Procedure:

Materials needed:

- catechol
- water
- balance and weigh boat
- labeled container, securely sealing
- secondary containment sufficient to hold entire volume of solution to be prepared
- waste collection container, appropriately labeled, securely sealing, in secondary containment

Procedure Notes:

PPE must be used appropriately throughout the procedures. Only TAs or instructors may handle solid or concentrated catechol.

Procedure Steps, Working with Dilute Catechol:

1. Don appropriate PPE. TA or instructor shall prepare working solution(s) for students prior to lab (see **Procedure Steps, Preparing Catechol Solutions** below); students may not handle solid or concentrated catechol.
2. For the lab, TA or instructor will set out solutions for student use.
3. Prior to the lab, students must be trained on the proper use of PPE and proper handling and disposal of catechol solutions.
4. Students must don appropriate PPE before beginning work.
5. Catechol can be measured into test tubes or cuvettes using disposable transfer pipets.
6. Waste solutions containing catechol shall be collected at student workstations and transferred to a waste container that closes securely.
7. Waste solutions that do NOT contain catechol should NOT be mixed with the catechol solutions. Non-hazardous solutions can be disposed of down the drain (e.g. potato extract and water) and should not be added to the volume of hazardous waste that will have to be shipped to a hazardous waste disposal facility.

Procedure Steps, Preparing Catechol Solutions

1. Collect the following materials and place them in a fume hood.
 - scoop
 - RO water, quantity needed
 - balance
 - weigh boats
 - tightly-closing container(s) for prepared solutions
 - secondary containment for container(s) of prepared solutions
 - waste container
 - spill clean-up materials: paper towel and spray bottle of water
 - waste container for solid waste
2. Don PPE.
3. Obtain solid catechol and place in fume hood. Keep the container tightly closed when not in use.
4. Check that fume hood flow is adequate. Each hood has an electronic monitor that indicates air flow. Flow can also be checked by tearing a strip of Kimwipe or tissue and holding it so that it dangles from the edge of the open sash. The strip of Kimwipe or tissue should be pulled toward the inside of the hood. If there is any indication that the hood is not functioning properly, DO NOT PROCEED. Report the problem to the Lab Supervisor immediately and work in a different hood that is functioning properly.
5. Work at least 8" in from the face of the hood. The fume hood should otherwise be empty to allow for adequate air flow while working. The balance cord should be fed through the slot at the base of the hood so that it does not impede the sash closure.
6. Measure appropriate amounts of RO water into tightly-closing containers.
7. Weigh out the needed amount of catechol into the weigh boat.
8. Add catechol to tightly-closing container. Cap securely and swirl gently to dissolve catechol.
9. Store prepared solutions in secondary containment in a secure location. Short-term storage in a locked lab or prep room is acceptable.

10. Dispose of used weigh boats and gloves as solid waste.
11. Clean up and put materials away. Clean glassware and scoop by washing with warm, soapy water and rinsing three times with RO water. Allow to air dry before putting it away.

9. Waste disposal and clean up:

- Catechol containing solutions must be collected and disposed of as hazardous waste.
- Waste containers must be clearly labeled with "Catechol Waste," the approximate concentration of catechol in the waste, the class, the instructor's name, and the date waste collection began.
- When the waste is ready for disposal, label the container "for disposal" and contact the Laboratory Supervisor.

10. Decontamination:

- No decontamination is necessary following the use of dilute catechol solutions. Normal cleaning procedures for glassware and lab surfaces should be followed after solutions have been collected as waste.

11. Exposures: Emergency procedures to be followed (from SDS):

The most important known symptoms and effects are as stated in the "Specific Hazards" statement at the beginning of this document.

General advice

Consult a physician. Show the safety data sheet to the doctor in attendance. Move out of the dangerous area.

Eye contact with catechol solutions

Rinse thoroughly with plenty of water for at least 15 minutes. Use the eyewash station in the lab. Consult a physician.

Skin contact with catechol, solid or concentrated solutions

Wash off immediately with soap and plenty of water. Take the victim immediately to hospital. Consult a physician.

Skin contact with catechol, dilute solutions

Wash off immediately with soap and plenty of water. Consult a physician.

Ingestion of catechol solutions

Never give anything by mouth to an unconscious person. Rinse mouth with water. Immediately consult a physician.

Inhalation

If breathed in, move the person into fresh air. Immediately consult a physician. If not breathing, give artificial respiration and call 911.

12. Spills:

- If a spill occurs, personal safety should come first.
- Alert everyone in the area where the spill occurred so that they can avoid contact with spilled material.
- Soak up the spilled liquid with paper towels. Place them in a separate waste container for solid wastes rather than in the container with liquid waste.
- Clean the area where the spill occurred with a standard laboratory cleaner and water.
- TA or instructor who spills solid catechol: use forceps or paper towel to pick up the spilled pieces if they are large enough to do so. Place in a waste container for solids. Once as much of the solid catechol is cleaned up as possible, place a paper towel over the area of the spill and gently spray with water. The solubility of catechol is high; this will cause any remaining catechol solids to dissolve and be soaked up by

the paper towel. Allow to stand wet for 15 minutes, then wipe up the area with an additional paper towel and place paper towels in the waste container for solids.

13. Phone numbers:

Biology and Wildlife Laboratory Supervisor	474-5622
Biology and Wildlife Laboratory Technician	474-7205
EHSRM Hazardous Materials (if B&W Lab Supervisor not available, assistance with a spill)	474-5617
EHSRM Industrial Hygiene (if Hazardous Materials not available; assistance with exposures)	474-6771
EHSRM office (if Hazardous Materials or Industrial Hygiene not available)	474-5413
University of Alaska Fairbanks Emergency Response (serious accidents, fire)	911

14. Other important information:

This material must not enter the standard solid or liquid waste streams (i.e. regular trash or sink drains). All contaminated materials must be collected and disposed of as hazardous waste.

Training Record

I, the undersigned, have read and understand the above SOP. I have been trained to carry out this procedure and will follow the above SOP. I agree to contact my Supervisor and the Biology and Wildlife Laboratory Supervisor if I want to modify this procedure and obtain permission for any modifications before implementing them.

Name	Signature	Date	Person Providing Training

Prepared by: Denise Kind **Date:** 5/22/2015
Reviewed by: Tracey Martinson **Date:** 7/24/2015