

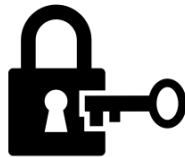




Uranyl Acetate

Laboratories should create their own specific SOP for the use of Uranyl Acetate

Radioactive

Radioactive

Hazards	Potential Hazards	<p><i>Uranyl Acetate is Radioactive and Toxic</i></p> <ul style="list-style-type: none"> • Very toxic by inhalation and if swallowed. • Danger of cumulative effects. • Target Organs: Liver, Kidney 	
	Selection & Purchase	<ul style="list-style-type: none"> • Prior to placing an order of Uranyl Acetate contact Dartmouth Environmental Health and Safety (EHS) by e-mail ehs@dartmouth.edu • Upton receipt of the notification, EHS will inspect the proposed use area. EHS will ensure that lab is provided with the necessary trays and/or waste containers. Once this area is approved this is the only area where stains can be made. • If only a small amount of uranyl acetate is needed there is the option of contacting Dartmouth College Electron Microscopy (EM) Facility for assistance in providing materials to make a stain. This is strongly recommended by EHS. • The EM Facility still requires an EHS authorization letter prior to dispensing. 	
Hazard Controls	Storage & Transport	<ul style="list-style-type: none"> • All stocks of uranyl acetate shall be stored in a single secure location within each authorized lab. • All storage cabinets shall be labeled “caution radioactive material” • All primary containers shall be stored in secondary containment that is large enough to hold any liquid that may spill/leak from the primary container. • Possible secondary containers are a tray with sides, a plastic bag or other container to adequately prevent the spread of contamination in the event of a spill/leak. 	<div style="border: 1px solid black; padding: 5px; text-align: center;"> <p>Caution Radioactive Material</p> </div> 
	Engineering Controls & Safety Equipment	<ul style="list-style-type: none"> • Transferring of solid/powder uranyl acetate and Staining operations must be performed in EHS Approved Designated Still Air Environment. • Label area as “Caution Radioactive Material”. • All uranyl acetate shall be performed on yellow trays provided by EHS. • Label yellow trays “Caution Radioactive Material”. 	<div style="border: 1px solid black; padding: 5px; text-align: center;"> <p>Use Only in Designated Still Air Environment</p> </div>
	Work Practice Controls	<ul style="list-style-type: none"> • Work only in EHS approved uranyl acetate designated areas. • When transferring solid/powder uranyl acetate performed the transfer in a still air environment. Tare an empty container then transfer an approximate quantity of uranyl acetate to the empty container. • The container shall be weighed again, so an appropriate volume of diluent can be added for the desired final concentration. • Due to high risk of internal entry absolutely no eating, drinking, smoking, chewing tobacco or applying cosmetics in the designated area. • After completion of work with uranyl acetate and prior to leaving the laboratory, remove all PPE and thoroughly wash hands and forearms with warm water and soap. 	

	<p>Personal Protective Equipment (PPE)</p>	<ul style="list-style-type: none"> Dartmouth College has a Policy on PPE for Chemistry Wear closed-toed shoes and clothing covering the legs. Minimum PPE: <ul style="list-style-type: none"> Lab coat Safety glasses/splash goggles 5 mil NEOPRENE gloves Dartmouth College Stockrooms provide Purple Nitrile Gloves which have a thickness of 0.09-0.15 mm from Cuff to Middle Finger. 	
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Other</p>	<p>Emergencies & Spills</p>	<ul style="list-style-type: none"> For fire or potential for a fire – Pull nearest fire alarm pull station, evacuate the building and go to a safe location to dial 911. (In Borwell, Rubin and Williamson, dial 5555) Serious injury or exposure to a hazardous material -- dial 911. <ul style="list-style-type: none"> Find the nearest eyewash station or safety shower Flush the contaminated area with large volumes of water While flushing, remove any clothing which may have been contaminated (including shoes) If the injury is to the eyes, hold the eyes open to ensure irrigation under the eyelids (15 minutes minimum) Continue flushing until EMS arrives If Spill is beyond your ability to control (See Spill below) Contact EHS 603-646-1762 or after hours contact Dartmouth Safety and Security at 603-646-3333. All spills need to be treated as a Radio Active Material (RAM) spill and needs to be cleaned up immediately. Taking into account the activity of the material, clean up will involve monitoring with a meter and swipes. Keep cleaning and conducting swipes until background radiation is reached. A small spill can be cleaned up with mild soap and water solution. Place all clean-up debris in a clear bag and label as “Uranyl Acetate Waste”. 	
	<p>Waste</p>	<ul style="list-style-type: none"> Label any waste containers with the appropriate waste labels. Contaminated dry solid waste (paper towels, pipettes, gloves and/or plastic ware) shall be collected in a plastic bag, sealed, and labeled with a radioactive waste tag. All uranyl acetate contaminated liquid, whether aqueous or non-aqueous, shall be collected in an approved sealed container, labeled with a radioactive waste tag. Mixtures of uranyl acetate with methanol is recommended to below 10%. All primary containers shall be stored in secondary containment that is large enough to hold any liquid that may spill/leak from the primary container. Absolutely <u>NO DRAIN DISPOSAL.</u> For waste pick up and disposal contact Dartmouth EHS by e-mailing ehs@dartmouth.edu 	
	<p>Surveys</p>	<ul style="list-style-type: none"> The <u>Radiation Safety Officer</u> may conduct initial radiation and contamination surveys. All laboratory personal working with uranyl acetate must perform routine contamination surveys o the work area. This is conducted using the Ludlum Model 3 with a pancake probe (model 44-9) the designed area is required to be surveyed at the end of the day when all work with uranyl acetate is complete. The action limit for removable contamination is 220 cpm/100cm². The area is considered contaminated when there is a reading of 3X the background detection. If the area is determined to be contaminated than the Radiation Safety Officer must be contacted: e-mail ehs@dartmout.edu or call 603-646-1762. State that you need to be put in contact with the Radiation Safety Officer and give a summary of contamination, the radiation source, name of lab, location of lab and your name. 	

Training	Dartmouth College requires certain training for employees. Anyone at Dartmouth working with radioactive materials or sources that produce ionizing radiation must complete Radiation Safety Training. This training introduces new radiation workers to the basic concepts of protection, accountability and security. Topics include the rules and regulations, dosimetry, biological effects of radiation, safe use and disposal of radioactive materials, ALARA principle, radiation detectors, emergency procedures and other relevant topics. It also provides an overview of rules and regulations specific to Dartmouth College. This training satisfies radiation safety requirements for basic as well as annual retraining. In addition, this chemical required Laboratory Safety/ Hazardous Waste Management. This training is mandatory for all personnel working in a teaching or research wet laboratory. It is an introductory program on laboratory safety and waste management in a biomedical, engineering, chemistry, earth science or physics lab at Dartmouth College. The course takes approximately 45 minutes to complete. Completion is required every three years.
Medical Surveillance	
Monitoring Requirements	As long as the quantities are below 25 grams and the only procedures conducted are staining then there is no need for personal monitoring devices.
Questions	Contact Dartmouth Environmental Health and Safety by e-mailing us a ehs@dartmouth.edu calling 603-646-1762 or visting our website .

“I have read and understand this Guidelines. I agree to fully adhere to its requirements.”

Last	First	Dartmouth ID	Signature

Acknowledgement: Special thanks for Duke’s Occupational & Environmental Safety Office for their permission to use this great design for our chemical guidelines. All Dartmouth High Hazard Guidelines are based on [Duke OESO Chemical SOP’s and Guidelines](#)