





Duke OESO Guidelines for Safe Use of CHLOROFORM (CAS 67-66-3)

AKA: Trichloromethane, Formyl trichloride



Hazards	Potential Hazards	<ul style="list-style-type: none"> Chloroform is suspected of causing cancer when ingested. Inhalation of vapors can cause headaches, drowsiness, dizziness, and nausea. Chloroform is an eye and skin irritant. Exposure limits: OSHA PEL: 50 ppm ceiling; ACGIH TLV: 10 ppm for an 8-hour workday. Chloroform has poor warning properties as its odor threshold (85 – 307 ppm) is above the exposure limits. Chloroform is not combustible but exposure to oxygen, fire, or high temperatures may lead to formation of phosgene, a highly toxic gas. For more information, see the SDS and the Lab Chemical Safety Summary for Chloroform.
	Selection & Purchase	<ul style="list-style-type: none"> Purchase the smallest containers practical. Purchase in shatter-resistant containers if available (such as plastic or PVC-coated glass). Purchase with a stabilizer such as amylene to limit formation of phosgene in the bottle.
Hazard Controls	Storage & Transport	<ul style="list-style-type: none"> Chloroform is NOT compatible with the following: Strong alkalis; chemically-active metals such as aluminum or magnesium powder, sodium or potassium; strong oxidizers. Transport in secondary containment, preferably a polyethylene or other non-reactive acid/solvent bottle carrier. Date bottle when received & when opened. See waste section. Avoid storing on the floor. <p style="text-align: right;">DO NOT STORE IN COLD ROOM</p> 
	Engineering Controls	<ul style="list-style-type: none"> Work with chloroform in a chemical fume hood. Dilute solutions may be used on the benchtop in small quantities.
	Work Practice Controls	<ul style="list-style-type: none"> Keep containers of chloroform closed as much as possible. Skin absorption is a possible route of exposure and chloroform readily penetrates lab gloves. Plan work for minimal glove contact. Use in the smallest practical quantities for the experiment being performed. To decontaminate surfaces, wipe the affected area three times with towels moistened with water (gloves must be worn).
	Personal Protective Equipment (PPE)	<p>Required PPE:</p> <ul style="list-style-type: none"> Two pairs of nitrile gloves (Chloroform readily penetrates 4-mil nitrile gloves) <ul style="list-style-type: none"> Immediately change gloves that are splashed or contaminated! Lab coat and Safety glasses  <p>For splashes, wear splash goggles, face shield, chemical resistant sleeves, and impervious apron</p> <p>If phenol and chloroform will be used together, review the OESO Phenol Guideline. Special care is needed due to phenol's severe skin hazard and chloroform's quick glove penetration.</p> <p style="text-align: right;">For spill clean up</p>
Other	Emergencies	<ul style="list-style-type: none"> See Emergency Response webpage or flip chart and/or lab specific chemical hygiene plan. For spill clean-up, use Silver Shield, Viton or Viton/butyl, or another glove rated for slow breakthrough with chloroform. Do not use double nitrile gloves due to quick breakthrough.
	Waste	<ul style="list-style-type: none"> Halogenated red cans can be used for waste and are available from Environmental Programs. If bottle is > 2 years old, submit entire bottle as waste due to possible presence of phosgene. See lab-specific chemical hygiene plan, Duke's Chemical Waste Policy, and Lab Chemical Waste Management Practice.
	Training	Sign signature page in lab-specific chemical hygiene plan to indicate review.
	Questions	Contact OESO Lab Safety at 919-684-8822 or labsafety@dm.duke.edu .