

Chemical Safety Practices Recommendations

Doxycycline (Vibramycin)

Exposure Hazards (1-3)			
<p>Category 1A Danger</p>  <p>Toxic to Reproduction</p> <p>May Damage Fertility or the Unborn Child May be Passed in the Milk and Harm Children</p>	<p>Category 4 Warning Toxic</p>  <p>Harmful if Swallowed</p>		
<p>Category 2 Warning Irritant</p>  <p>Causes Skin Irritation and Serious Eye Irritation</p>	<p>Category 3 Warning Toxic</p>  <p>May Cause Respiratory Irritation</p>		
Response to Exposure			
Oral	Dermal	Inhalation	Injection
Rinse mouth; do not induce vomiting. Report to OHS.	Wash skin with soap and water for 15 minutes. Rinse eyes for 15 minutes. Report to OHS.	Leave area; go to clean air. Report to OHS.	Report to OHS.
Special Precautions	<p>Pregnant women should be cautious when working with or around Doxycycline.*</p> <p>Discard garments as medical waste if contaminated with Doxycycline.</p>		
Personal Protective Equipment	<p>Gloves (double) (Nitrile) Skin Protection (Suit or Scrubs or Lab Coat) Eye Protection (Safety-glasses or Goggles) Closed-toe shoes Use N100 respirator if engineering controls are not available.</p> 		
Engineering Controls	<p>Doxycycline powder- Chemical Fume Hood (CFH) (4) Doxycycline solution- CFH or Biosafety Cabinet (Class II, B2 BSC if aerosolized) Animal waste and bedding until two days after last treatment- CFH or Class II, B2 BSC</p> 		
Animal Handling	Avoid exposure to animal waste/tissue until two days after last treatment. (5)		
Bedding Disposal	Dispose of bedding as medical waste until two days after last treatment.		
Work Practices	Empty Doxycycline containers and unused Doxycycline must be disposed of as medical waste. Follow LASP SOP 4.003F for preparation, handling, dosing, and disposal of Doxycycline.		

Questions or concerns: Please contact EHS, Ted Witte, theodore.witte@nih.gov or 301-846-5860
 Reviewed 5/27/2015 *These recommendations are not final and may be updated.*

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References:

1. Doxycycline Hyclate MSDS [Internet]. 2014 [cited 05/27/2015]. Available from: <https://www.caymanchem.com>.
2. Vibramycin Injectable Drug Label [Internet]. United States Food and Drug Administration. 2014 [cited 5/27/2015]. Available from: <http://www.accessdata.fda.gov>.
3. Nations U. GLOBALLY HARMONIZED SYSTEM OF CLASSIFICATION AND LABELLING OF CHEMICALS (GHS) 5th ed2013.
4. National Research Council Committee on Prudent Practices in the L. The National Academies Collection: Reports funded by National Institutes of Health. Prudent Practices in the Laboratory: Handling and Management of Chemical Hazards: Updated Version. Washington (DC): National Academies Press (US) National Academy of Sciences.; 2011.
5. Schach VWM, Schachaavonwittenau M, Twomey TM, Swindell AC. The disposition of doxycycline by the rat. *Chemotherapy*. 1972;17(1):26-39.

Doxycycline is an antibiotic in the tetracycline class of drugs. Tetracyclines function by inhibiting the translation of RNA into protein. The adverse reproductive effects reportedly caused by tetracyclines include developmental abnormalities of the teeth and bones in the children of mothers treated with therapeutic doses (~50-200 mg) during pregnancy.

Doxycycline is rapidly excreted by the fecal route but not extensively metabolized. Excretion of active drug will continue for up to two days. The waste of animals treated with or fed Doxycycline should be handled as medical waste.

* Tetracycline, of which Doxycycline is a chemical variant, was included in the 'NIOSH List of Antineoplastic and Other Hazardous Drugs in Healthcare Settings, 2012' but was removed from the 2012 edition. However, the Globally Harmonized System of Classification and Labelling of Chemicals (3.7.2.5.7-10) suggests that a dose of 1000mg/kg be used as a 'limit dose' for substances which require 'high doses' to have teratogenic effects, and the therapeutic dose observed to cause fetal defects is significantly lower than this suggested threshold.