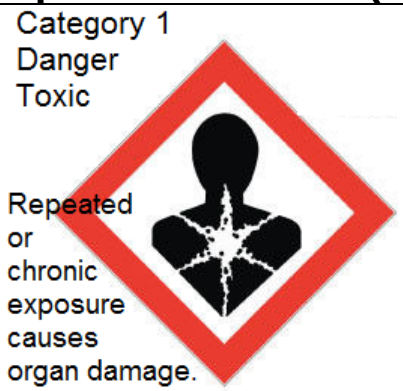
Chemical Safety Practices Recommendations
Everolimus (Afinitor, Certican, Zortress)

Exposure Hazards (2)



Repeated or chronic exposure may affect the immune system and cause anemia, fatigue, ulceration, and metabolic abnormalities.(1)

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	Pregnant women should be extra cautious when working with Everolimus. (3) Liver damage or disease may increase the effects of Everolimus.(4) Discard garments as hazardous if contaminated with Everolimus.
Personal Protective Equipment	Gloves (Double glove) (Latex or 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. 
Engineering Controls	Everolimus powder- Chemical Fume Hood (CFH) (5) Everolimus solution- CFH or Biosafety Cabinet (Class II, B2 BSC if aerosolized)  Animal waste and bedding until 10 day after last treatment- CFH or Class II, B2 BSC
Animal Handling	Avoid exposure to animal feces until 10 days after last treatment. (6)
Bedding Disposal	Dispose of bedding as hazardous material until 10 days after last treatment.
Work Practices	Empty Everolimus containers and unused Everolimus must be disposed of as hazardous. Follow LASP SOPs for preparation, handling, dosing, and disposal of Everolimus.

References:

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3. NIOSH. NIOSH list of antineoplastic and other hazardous drugs in healthcare settings 2014. Cincinnati, OH: National Institute for Occupational Safety and Health, DHHS (NIOSH), U.S. Department of Health and Human Services CfDCaP; 2014 September 2014. Report No.: 2014-138 Contract No.: 2014-138.
4. Peveling-Oberhag J, Zeuzem S, Yong WP, Kunz T, Paquet T, Bouillaud E, et al. Effects of hepatic impairment on the pharmacokinetics of everolimus: a single-dose, open-label, parallel-group study. Clinical therapeutics. 2013;35(3):215-25.
5. 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.
6. Kirchner GI, Meier-Wiedenbach I, Manns MP. Clinical pharmacokinetics of everolimus. Clinical pharmacokinetics. 2004;43(2):83-95.

Questions or concerns: Please contact EHS, Ted Witte, theodore.witte@nih.gov or 301-846-5860

Reviewed 12/10/2014 These *recommendations are not final and may be updated.*

Chemical Safety Practices Recommendations
Everolimus (Afinitor, Certican, Zortress)

Everolimus, also known as Afinitor and Zortress is an inhibitor of mTOR and causes cells to pause in their growth cycle before replicating DNA. It is similar to Sirolimus but has improved bioavailability. It is used as an antineoplastic drug to inhibit the growth of cells in kidney and breast cancer, but also to reduce immune function to prevent rejection of transplanted organs. As with most antineoplastic drugs, the effects of chronic exposure are seen in organs with rapidly dividing cells such as the skin, digestive tract, and bone marrow.

Because Everolimus is a FDA Pregnancy Category D substance, pregnant women should exercise additional caution because of the possibility that it may harm the growth of the developing fetus.

Everolimus is metabolized by CYP3A4 and therefore may accumulate to unusually high levels in people with liver damage or who consume CYP3A4 inhibitors such as Grapefruit Juice.

Due to poor bioavailability through the oral route and extensive metabolism by the liver Everolimus is primarily excreted in the feces with most of the dose passing directly through the bowels. However, with a terminal half life of up to 35 hours it may be up to ten days before it is completely cleared from the body.

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