









Summary of Regulations / Standards and Health Hazards

Sterilant Gas	 U.S. Dept of Labor Occupational Safety & Health Administration		 NIOSH IDLH (Immediately Dangerous to Life & Health)	 International Agency for Research on Cancer Centre International de Recherche sur le Cancer 	
	8 Hr TWA PEL (Permissible Exposure Limit)	15 Min TWA EL (Excursion Limit)		    National Toxicology Program U.S. Department of Health and Human Services	
Ethylene Oxide (EtO)	<i>1.0 ppm (a)</i>	<i>5 ppm (a)</i>	<i>800 ppm (a)</i>	Known human carcinogen (a) <ul style="list-style-type: none"> • A powerful mutagen and clastogen at all phylogenetic levels (b) • Associated with malignancies of lymphatic and haematopoietic cancer with leukemia risk (b) (c) • increased risks of lymphosarcoma/reticulosarcoma and breast cancer (c) (d) • Increased frequency of spontaneous abortion (d) with adverse reproductive effects (e) • Chromosomal aberrations in bone marrow cells (b) (d) • CNS depression, pulmonary edema, and in extreme cases, respiratory distress & coma may result from long term exposure (f) • Skin sensitization, respiratory irritation and nervous system effects (e) 	
	a) http://www.cdc.gov/niosh/npg/npgd0275.html b) http://monographs.iarc.fr/ENG/Monographs/vol60/volume60.pdf c) http://www.ccohs.ca/oshanswers/chemicals/chem_profiles/ethylene_oxide/health_eth.html d) http://www.hc-sc.gc.ca/ewh-semt/pubs/contaminants/psl2-lsp2/ethylene_oxide/ethylene_oxide_2-eng.php#a24412 e) http://www.cdc.gov/niosh/81130_35.html f) http://www.atsdr.cdc.gov/MHMI/mmg137.html				
Hydrogen Peroxide (H₂O₂)	<i>1.0 ppm (g)</i>	<i>n/a</i>	<i>75 ppm (h)</i>	Known Animal carcinogen (g) <ul style="list-style-type: none"> • Concentrations >5% can cause injury to eye surface/ulcerations (j) • Inhalation > 10% vapor solution may result in severe pulmonary irritation (i) • Repeated exposure may cause chronic irritation of the respiratory tract and partial or complete lung collapse (j) • Inhalation of high concentrations may result in seizures, cerebral infarction or cerebral embolism; ensuing damage to the CNS may cause permanent neurological deficits or death (j) 	
	g) http://www.osha.gov/dts/chemicalsampling/data/CH_246600.html h) http://www.cdc.gov/niosh/npg/npgd0335.html i) http://www.atsdr.cdc.gov/tfacts174.pdf j) http://www.atsdr.cdc.gov/MHMI/mmg174.html				
Ozone (O₃)	<i>0.1 ppm (k)</i>	<i>n/a</i>	<i>5 ppm (k)</i>	Primary Irritant <ul style="list-style-type: none"> • Severe and permanent lung injury or death could result from even a very short-term exposure to relatively low concentrations (l) • Symptoms following acute exposures (0.25-0.75 ppm) include cough, shortness of breath, tightness of the chest, a feeling of an inability to breathe (dyspnea), dry throat, wheezing, headache and nausea (l) • Animal studies indicate that ozone can cause a potentially fatal accumulation of fluid in the lungs (pulmonary edema) (l) • Long-term exposures to ozone may result in impaired lung function (l) 	
	k) http://www.cdc.gov/niosh/npg/npgd0476.html l) http://www.ccohs.ca/oshanswers/chemicals/chem_profiles/ozone/health_ozo.html				