



## Just the Facts...

## Fog Oil - Medical

<b>GENERAL INFORMATION</b>	<p>Fog oil is one of many “obscurants” used to create a cloud or haze that screens armed forces from view. The enemy uses obscurants to prevent target acquisition, visual communication, and movement. Obscurants are either naturally occurring or manmade particles suspended in air that block or weaken the transmission of a particular part or parts of the electromagnetic spectrum. For example, visual obscurants that block visible light and the near infrared part of the electromagnetic spectrum block viewers such as binoculars, weapon sights, night-observation sights and laser range finders. Other obscurants that also block light in the far infrared spectrum can block battlefield viewers and weapons guidance systems such as homing systems and anti-tank and air defense systems.</p> <p>Fog oil is an oil smoke generated by injecting mineral oil into a heated manifold. The oil vaporizes upon heating and condenses when exposed to the atmosphere, producing respirable particles. Since 1986, the military specifications for the mineral oil used for fog oil have required specific processes that remove all cancer causing components or additives. This reduces potential health effects from fog oil, even if exposure were to be long-term.</p>
<b>ROUTINE EXPOSURES IN THE DEPLOYED SETTING</b>	<p>Fog oil may be used as a visual obscurant to block visible light and cover troop movements or activities.</p>
<b>PERSONAL PROTECTIVE EQUIPMENT (PPE) and COUNTERMEASURES AVAILABLE FOR DEPLOYED PERSONNEL</b>	<p>U.S. Army training policy requires use of protective masks when passing through or operating in dense smoke (visibility less than 50 meters) or when operating in a smoke haze (visibility greater than 50 meters) if the exposure will exceed four hours. Protective masks should also be worn when exposure produces breathing difficulty, eye irritation or discomfort. Smoke generator personnel must also mask if they cannot stay upwind of the smoke generator.</p> <p>Showering and laundering of clothing where feasible will remove fog oil from skin.</p>
<b>EXPOSURE LEVELS HISTORICALLY ENCOUNTERED</b>	<p>For fog oil smoke, visibility of 10 meters corresponds to an approximate concentration of 31 mg/m<sup>3</sup>, with visibility of 50 meters corresponding to 6.2 mg/m<sup>3</sup>, and 200 meters corresponding to 1.6 mg/m<sup>3</sup>. Sampling has been conducted at the US Army Chemical School during field training exercises (FTX) and operations and maintenance courses for smoke generators that support these estimates. A review of the toxicity data estimates that 5 mg/m<sup>3</sup> represents the concentration that is permissible for a continuous exposure 8 hours per day, five days per week. For Acute exposures, an allowable 15 minute exposure level is 360 mg/m<sup>3</sup> with a one hour allowable level of 90 mg/m<sup>3</sup> and a six hour allowable concentration of 15 mg/m<sup>3</sup>. Exposures to troops can be estimated based on visibility and masking procedures should be followed for dense fog oil.</p>

<p><b>SIGNS AND SYMPTOMS OF ACUTE AND CHRONIC EXPOSURE</b></p>	<p>Workers who worked for years with mineral oil mists have not had significant respiratory problems. Workers exposed to concentrations less than 10 mg/m<sup>3</sup> typically showed no pulmonary symptoms. In some instances, workers had increased cough or phlegm, but the oils were usually not the purified oils used for fog oil. Animals exposed to very high concentrations of mineral oil mists can get “lipoid pneumonia.” This condition is a coating of the lungs with oil making it difficult to breath, but this has not been seen in workers and typical work or training exposures are much lower.</p> <p>Oils can irritate the skin initially and can cause rash like conditions with chronic exposure. The oil used for fog oils has not been shown to cause these conditions. The oil used for fog oil does not contain additives that are known or thought to cause cancer.</p>
<p><b>SIGNS AND SYMPTOMS OF ACUTE AND CHRONIC EXPOSURE</b></p>	<p>Respiratory problems have not been reported in soldiers who train regularly with fog oil. Workers in various industries are exposed to fine mists of oil and in some instances have reported increased cough and phlegm, or wheezing after long term exposures. A review of all of these studies concluded that the majority of studies do not point to serious respiratory problems in the concentrations commonly found in industry. Military operations and masking guidance should prevent exposures to concentrations that would pose any short or long term health risks. Cough or mucous production, should it occur, will resolve.</p> <p>Fog oil is less irritating to the skin than diesel fuel due to the purification processes.</p>
<p><b>TREATMENT REQUIRED/AVAILABLE FOR EXPOSURE</b></p>	<p>No specific treatment is required. Acute symptoms, if any, resolve on their own</p>
<p><b>LONG TERM MEDICAL SURVEILLANCE REQUIREMENTS OF HEALTH EFFECTS MONITORING</b></p>	<p>If an exposure occurred during deployment, it would be a short-term exposure and would not require any long-term follow-up. There are no specific tests that will help determine the degree of exposure or the prognosis if the soldier has complaints. Standard pulmonary function testing can be performed if supported on clinical grounds.</p>
<p><b>SPECIAL RISK COMMUNICATION INFORMATION</b></p>	<p>Fog oil exposures, if they occur during the deployment should not cause health effects in the troops exposed if the procedures for masking are followed. If soldiers mask when visibility is less than 50 meters, health effects should not occur. Exposure to high concentrations for short periods without a mask may cause cough or increased phlegm and occasionally shortness of breath, but these are temporary conditions. Fog oil should not be irritating to skin.</p>