



**DEFENCE HEALTH SERVICE BRANCH**

*Just the Facts...* **Dust and Sand in the Middle East Area of Operation**

<p><b>GENERAL INFORMATION</b></p>	<p>Before the 1991 Gulf War, air sampling data indicated that the levels for particulate matter (small particles) in the Kuwait Theatre of Operations were among the highest in the world. These particles come primarily from natural fine clay dust and sand and they are normal for the region.</p> <p>Sand and dust storms are common in the Persian Gulf region, but they are worse during the summer when the northwesterly <i>shamal</i> winds occur with greater frequency and intensity. Visibility can be reduced to less than 30 metres for extended periods (24 hours or more).</p> <p>The dust and sand are made up of particles of many different sizes. The smallest particles are called “PM<sub>10</sub>” to scientifically describe their size. These particles can be inhaled into your lungs. There are also larger particles in the dust and sand. Some of these are so large that they fall out of the air and are not inhaled. Particles in between the very small and the very large enter your nose and mouth when breathing and they are trapped at different places in your respiratory tract. Some of these are trapped in your nose and can be seen in the mucus when you blow your nose. Some may come out when you cough. These are methods that the body uses to eliminate most inhaled particles. Long exposures to high concentrations of inhaled particles that are not removed have been associated with deterioration in lung function, and damage to lung tissue. However, these types of high levels and long time exposures are usually associated with uncontrolled industrial situations.</p> <p>The breathing of silica (sand)-containing dust in the lungs has been studied in people who live in desert areas of Africa and the Persian Gulf. After many years of exposure, some of these individuals may have dust accumulate in their lungs with no adverse health effects. This is a non-progressive condition called “Desert Lung Syndrome”. It is the body’s natural response to long-term exposure to these inhaled sand particles. This condition is different from the occupational disease “silicosis”.</p>
<p><b>ROUTINE EXPOSURES IN THE DEPLOYED SETTING</b></p>	<p>Dust and sand may be naturally blown by the wind, or created by vehicular traffic, aircraft, exploding munitions or other human activities.</p>
<p><b>PERSONAL PROTECTIVE EQUIPMENT (PPE) and COUNTERMEASURES AVAILABLE FOR DEPLOYED PERSONNEL</b></p>	<p>Personal actions to avoid exposure and breathing of wind-borne dust and sand should be taken, if possible. The use of glasses, goggles, shemaggs (large kerchief-type cloths), and dust masks provide general protection from the large abrasive and irritating particles. They may not provide full protection against small particles.</p>

<b>EXPOSURE LEVELS HISTORICALLY ENCOUNTERED</b>	<p>High levels of particulate matter were found in Kuwait during a US Army study in 1991. These levels were similar to previously reported average background levels for the area.</p> <p>Average Kuwait "PM<sub>10</sub>" concentrations measured by the US Army during a nine-month period in 1991 ranged from 265 to over 670 micrograms/m<sup>3</sup>. This is about 5 to 14 times higher than the National Australian ambient air quality standard of 50 micrograms/m<sup>3</sup>.</p> <p>75% of the particles were from natural sources (ie clay) in the region. 10% – 25% of the particles were from oil fires that were burning at the time, and other industrial sources. About 10% of the particles were from "other sources", including industrial or military operations which produced small particles.</p>
<b>SIGNS AND SYMPTOMS OF ACUTE AND CHRONIC EXPOSURE</b>	<p>Sand and dust can make it difficult to see without causing actual injury. They can irritate the skin and sensitive membranes of the eyes, nose, and throat, and aggravate pre-existing sinus and asthmatic conditions. Typical symptoms reported by personnel during the 1991 Gulf War were cold - or flu-like and included cough, runny nose, eye and throat irritation, and shortness of breath. Persons wearing contact lenses need to pay extra attention to their eye care and avoidance of corneal abrasions.</p> <p>The long-term (chronic) particulate exposures can worsen asthma. However, chronic (long term) health effects from exposure to the dust and sand are not expected to occur.</p>
<b>REVERSIBILITY OF ACUTE AND CHRONIC EFFECTS</b>	<p>These symptoms are generally short-term and reversible and are due mainly to the particulate matter and not silica content. Based upon Gulf War information, chronic (long term) health effects are not expected.</p>
<b>TREATMENT REQUIRED/AVAILABLE FOR EXPOSURE</b>	<p>Sand should be rinsed out of the eye with water until removed. Care must be taken to avoid rubbing the eye and scratching the surface of the eyeball. Skin rashes and respiratory complaints should be treated symptomatically as needed.</p>
<b>LONG TERM MEDICAL SURVEILLANCE</b>	<p>Medical surveillance for long-term health effects is not necessary.</p>
<b>SPECIAL RISK COMMUNICATION INFORMATION</b>	<p>Dry air, dust and wind dry out the nose and throat and can cause nosebleeds, coughing, wheezing, and other short-term respiratory problems. However, sand exposure has not been found to be a long-term health risk for veterans of the first Gulf War in 1991 or previous desert deployments. Sand exposure has not been shown to cause chronic lung problems among Western contract employees working in the Persian Gulf.</p> <p>However, some of the dust that a person inhales is from activities that the individual or others nearby have generated. Under some conditions, this dust may be harmful. Activities and industrial processes that generate dust should be evaluated by Preventive Medicine and Environmental Health personnel.</p>

Notes: The proponent for this Fact Sheet is the Directorate of Preventive Health, DHSB. All comments and questions should be forwarded to DPH, DHSB, Campbell Park Offices (CP 2-7-154), Canberra ACT 2600 or email [DPH.DHS@defence.gov.au](mailto:DPH.DHS@defence.gov.au) This Fact Sheet was developed with the cooperation of the U.S. Army Center for Health Promotion and Preventive Medicine.