



Just the Facts... Exposure to Oil Fires/Oil Fire Smoke - Individual

THE MAJOR FACTOR IN DETERMINING THE BIOLOGICAL AND HARMFUL EFFECTS FOLLOWING EXPOSURE TO OF/OFS IS THE AMOUNT (HOW MUCH OR THE “DOSE”) TO WHICH YOU ARE EXPOSED.

- **Background:** Burning crude oil can produce heat and large amounts of thick black smoke. The smoke is composed of solid unburned carbon (soot) and other “particulate” pollutants (in both the solid and liquid states), as well as, gases of volatile substances and vaporized matter. The chemical pollutants found in the smoke vary with the composition of the crude oil and factors related to how it is burned. There are several combustion products that may be present and could be significant health hazards. These products include non-carbon substances (like acids and metals) as additional free particles or stuck to the surface of the soot; gases (like carbon dioxide, carbon monoxide, sulfur oxides, nitrogen oxides, and hydrogen sulfide); and vaporized liquids and solids. Generally, the further you are away from the source of the fire and smoke, the less there is of harmful substances.

General instruction should have been given to limit your exposure to any oil well fires as the mission would allow. Fortunately, the numbers of fires during this conflict were limited. All of the evaluations from the first Gulf War with hundreds of oil well fires indicate that the smoke posed little health risk. Since there were many fewer fires during this conflict, the health risk should be even less. Although you may have been exposed to some smoke, the dose or amount may not cause harmful health effects. Most health effects from smoke inhalation occur very soon after the exposure. If you did not have symptoms at the time, it is not likely that you will have any now or in the future.

Your signs and symptoms (medical complaints) at the time will form the largest portion of the information used in the assessment of your health status. Your ability to recall and provide information concerning your location, details of the exposure situation, and the development of signs and symptoms will be very important. If you recall additional information after your medical interview/visit, please do not hesitate to contact the healthcare provider who performed your evaluation.

- Heat exposure from any fire is dependent upon how close one is to the fire source. If you were close to the flames of the fire, skin and mucous membranes may be obviously burned. Hot smoke and gases can also burn the passages of the nose, airways, and lungs. These are actual thermal burns that are treated like an injury from any heat source. Internal damage to the breathing passages and lungs may not be seen unless a doctor looks inside with a viewing scope. The most common feelings that you would have with this type of injury are shortness of breath and difficulty with breathing. Coughing is common, and burning, itching, or “dry” red eyes may also occur. If you do not have breathing difficulties and you are not coughing, it is unlikely that you have had a significant internal burn.

“Heat stress” illnesses (or injuries) can also occur if you are directly involved in fighting the fire or performing other heavy activities that exceed your body’s ability to remove heat and cool itself. In these types of illnesses, the body’s ability to regulate temperature becomes strained, and different types of heat-related illnesses can occur. These illnesses range from mild dizziness and heat cramps, to heat exhaustion, and even potentially fatal heat stroke. These illnesses start during, or soon after, the heat

exposure. If you felt dizzy, lightheaded, or fatigued during, or shortly after, performing activities while exposed to the heat of a fire, allowing your body to cool while resting, replacing water losses, and eating high calorie food items will usually be sufficient for normal heat dissipation and regulation—and return to “normal”. In more severe cases, cooling methods (use of fans and evaporative cooling, use of cold water) may be needed. If hospital admission was not necessary for the treatment of a heat injury, return to routine duties is often not delayed for more than 24-48 hours.

- Some of the chemicals that may be released in an oil fire can also damage the breathing passages or lungs. Exposure to a significant level of these types of chemicals can cause irritation or chemical burns to any exposed tissue. These chemicals can cause you to feel a burning sensation-or you may be unaware of their presence. Coughing is a frequent response to chemicals that irritate or burn the breathing passages or lungs, but this may not occur during the actual exposure. Your eyes may water and your nose may run. In some cases, the smoke particles (soot) found in oil fire smoke may appear in your sputum or mucous as black streaks or particles. This is actually soot that has been trapped and is being eliminated from your body.

“Chemical burns” can be very serious, but based upon information provided by you and others; a medical evaluation can detect and treat any harmful health effects. The inhalation of gases, vapors, fumes, and smoke that affect the lining and tissues of the respiratory tract can produce effects ranging from minor immediate irritation, to rapid or delayed airway and lung diseases. As some of these conditions may appear a period of time after exposure has occurred, it is important to contact your provider if you experience any medical complaints in the weeks to months following a significant OF/OFS inhalation. Your medical provider will give you additional information on the need to return if this occurs.

- Some biologically inert gases act by displacing oxygen and cause harmful health effects by reducing the amount of this essential gas. Other chemicals, such as carbon monoxide (CO) and hydrogen sulfide (H₂S), must be absorbed into the body in order to produce harmful effects at sites inside the body. After inhalation of substances in an OFS plume, some chemicals may be rapidly absorbed and produce immediate effects, or some may produce effects that are delayed in onset, or occur only after repeated or long term (chronic) exposure. Based upon the exposure conditions and your medical assessment, specific medical recommendations for your short- and long-term follow-up will be provided.
- Most individuals exposed to OF/OFS in a non-firefighting capacity will likely not experience exposures that are medically significant. You may have experienced a temporary cough, production of black sputum and mucous secretions, or mild irritation of the upper airways and lungs, but unless the exposure resulted in continuing or other related medical signs and symptoms, it is unlikely that you will experience any permanent effects or disability. The initial or early signs and symptoms generally resolve over a few days. The soot, or black material in your sputum or nasal secretions, goes away in a day or so after OFS exposure stops. If you have other related medical conditions that did not improve over the following few weeks, you should tell your healthcare provider.
- **Prevention:** Whenever possible from an operational standpoint, seek a location for work or bivouac that is not in an OFS plume. Locate, or relocate, upwind, from a known source of OF/OFS, or if this is not possible, move further from the source, or take efforts to avoid or minimize inhalation of OFS by shutting windows, closing tent flaps, or wearing a respirator when conditions require it.