



## **IN SITU BURNING: GENERAL BACKGROUND AND COMMON QUESTIONS**

In-situ burning (ISB) is viewed with growing interest as a response tool. Under the right conditions, burning may provide a rapid and efficient way of removing oil from the water surface. Moreover, under some conditions, burning may represent the preferred or only method to remove the spilled oil from the water surface. ISB produces large quantities of smoke, which may cause public concern. Recent public planning meetings related to in situ burning also have elicited concerns about the fate and effect of burn residues after use of the technique. Common questions that responders can expect during the consideration of in situ burning in a spill situation include the following:

### **Q. Is ISB dangerous?**

**A.** When well planned, burning spilled oil is a very safe removal technique. The burning will be planned, controlled, and monitored and will occur over a short period of time. The by-products of burning oil are similar to the burning or combustion of other products such as gasoline in cars, firewood, home and industrial heating and power generation. The by-products from the oil burn do not pose a threat to populated areas. If there is a concern that the general public may be exposed to smoke from the burning oil, we will monitor particulate concentrations in populated areas.

### **Q. How long will the smoke stay in the air?**

**A.** How long the smoke stays in the air depends on the wind direction and weather conditions at the time of the burn. Some parts of the plume may stay in the general area of the burn for several hours after the burn is completed--and in unusual circumstances, days--but the thickest part of the plume will usually dissipate within a few hours. Under winter conditions along the open Pacific coast, the duration of the smoke in the immediate area of the burn would be expected to be very brief.

### **Q. What health standard will responders be using when considering a burn?**

**A.** The primary human health concern is the particulate matter in the smoke plume. Of specific concern are the very small particles 10 microns or less in diameter (a micron equals one-millionth of a meter, or 0.0004"). These particles are commonly referred to as "PM 10" and are small enough to lodge in human lungs. It is generally long-term exposure, over months or years, to PM 10 that affects human health. However, short-term exposure to high concentrations can aggravate symptoms in sensitive individuals with heart or lung ailments. The current national and state health standard is a maximum concentration of 150 micrograms of PM 10 per cubic meter of air averaged over a 24-hour period. However, our policy incorporates a more restrictive guideline recommending a maximum concentration of 150 micrograms of PM 10 per cubic meter of air averaged over a 1-hour period.

### **Q. What will be released into the environment when you burn the oil?**

**A.** Burning the oil will produce a dense cloud of black smoke. Depending on wind direction and weather conditions, you might be able to see the smoke from the shore. The smoke is black because of the black particles of carbon. An oil fire also produces

water vapor and invisible gases, mainly carbon dioxide, carbon monoxide, sulfur dioxide, and oxides of nitrogen. Scientists have studied gases from oil fires. These studies have shown that the concentration of gases produced during in-situ burning, are within safe levels for humans beyond three miles downwind of the source. The burn is planned so that the smoke should not travel over any populated areas. The gas concentrations will not be around long enough nor at levels high enough to cause harm.

**Q. What are the risks to human safety and what precautions should be taken?**

**A.** A lot of planning is done in preparation for in-situ burning. The protection of public health is a key factor when planning a burn and because of this there should be no public health risks. If there is a chance that the burn will exceed federal and/or state air quality standards, the burn will not take place.

The current national and state health standard, based on EPA's National Ambient Air Quality Standard, is a maximum concentration of 150 micrograms of PM 10 per cubic meter of air averaged over a 24-hour period. However, our policy follows the National Response Team guidelines which recommend a more restrictive maximum concentration of 150 micrograms of PM 10 per cubic meter of air averaged over a 1-hour period. This concentration is a guideline, not a standard. If the NRT maximum concentration guideline is substantially exceeded, it may justify termination of the burn but if particulate levels remain generally below the recommended limit, there is no reason to believe that the population is being exposed to particulate concentrations above the EPA's National Ambient Air Quality Standard.

**Q. I am pregnant, what effects will this have on my unborn child?**

**A.** Burning will result in no adverse impacts to you or your unborn baby. The protection of human health is of utmost importance to us. Plans, controls, and monitoring will be set in motion so that no one will be exposed to the smoke or vapors from the burning oil.

**Q. What effect will this have on shoreline contamination?**

**A.** Because we have decided to burn the oil, the shoreline affects will be minimized. This is one of the major reasons that use of the technique is being seriously considered. If properly planned and implemented, in-situ burning will prevent or significantly reduce the extent of shoreline impacts, including exposure of sensitive natural, recreational, and commercial resources.

**Q. What clean-up methods are possible?**

**A.** There are three clean-up methods: in-situ burning, dispersants and mechanical methods. In-situ burning burns the spilled oil on the water, removing nearly all of the contained oil from the water. Dispersants are specially designed chemical products that break the oil slick into small particles. Mechanical response uses physical barriers and mechanical devices, such as containment booms and skimmers, to redirect and remove oil from the surface of the water. There is also the option of doing nothing, and allowing natural recovery.

Responders will determine what clean-up methods to use based on the potential shoreline and natural resource impacts, the size, location, and type of oil spilled, weather, and other variables. In a major spill it may be possible for all response techniques to be used

simultaneously. The goal is to find the right mix of equipment, personnel, and techniques that will minimize the spill's environmental, socioeconomic, and cultural impacts.

**Q. What effect will this burn have on the fishing industry?**

**A.** One of the reasons we decided to burn the oil is to prevent adverse and widespread effects to marine life, including fish and crabs. While there is some limited evidence that ISB residues can sometimes sink, these cases are the exception. We believe the environmental tradeoff of significant volume reduction and the greatly reduced shoreline impacts justifies the serious consideration of ISB in this situation.