Petroleum, Heavy Metals, Pollutants Transported to Surface Water

Petroleum, heavy metals, and other chemical pollutants for onfarm use are lost from areas of concentration (handling, storage, or processing facilities and areas) to receiving surface waters in quantities that degrade water quality and limits its use for intended purposes. This resource concern does not cover pathogens/manure, sediment (although sediment contaminated with petroleum, heavy metals, or other chemical pollutants would be covered), nor naturally occurring salts.

What is it?
Petroleum is generally thought of in terms of crude oil products but also includes all liquid, gaseous, and solid hydrocarbons. Petroleum contamination in agriculture typically occurs through point source spills and from nonpoint sources, where small amounts of petroleum are collected through runoff from asphalt-covered roads and parking areas, and over a long period of time add up to large-scale effects. A heavy metal can be defined as a chemical element with a specific gravity that is at least five times that of water. Examples of heavy metals include arsenic, cadmium, iron, lead, chromium, copper, zinc, nickel, and mercury. Heavy metal contamination is typically through the use and application of biosludge, contaminated animal manure, and inorganic fertilizers.

Why is it important?
In large concentrations, the hydrocarbon molecules that make up crude oil and petroleum products are highly toxic to many organisms, including humans. Petroleum products can have a detrimental effect on oxygen demand and transfer in surface water, and it can restrict the penetration of sunlight to aquatic plants. Heavy metals are also toxic and can affect other systems by leaching or runoff. Sufficient amounts of clean, usable water enable crops and livestock to thrive. Water is also necessary to preserve the environments of many sensitive or protected lands such as wetlands.

What can be done about it?
The key to addressing petroleum and heavy metal transport to surface water is prevention. The proper handling and storage of petroleum and chemical products can prevent contamination of the soil and water. Containment systems are very effective in containing spills. Heavy metals buildup can be addressed through the proper use, application, and monitoring of levels over time of biosludge, animal manure, and inorganic fertilizers.