Ionics Agar Environmental Ltd.

LEAKWISE® OIL ON WATER MONITORING SYSTEMS

APPLICATION NOTE #8

GROUND WATER REMEDIATION

The unique capabilities of the Agar Leakwise® monitoring systems of oil sheen detection and oil thickness monitoring have many applications in the evaluation and remediation phases of contaminated sites.

Peripheral Wells Monitoring

Leakwise® ID-221 oil sheen detector installed in peripheral wells can detect as little as 0.3mm (1/80") layer of hydrocarbons and other organic solvents on water. This unique detection capability can be used for remote monitoring to provide data on movement of hydrocarbon plume earlier than by taking samples manually, and thus save many working hours of technicians and consultants.

Site Closure After Remediation

An ID-221 detector, installed in wells for remote monitoring after remediation, may reduce high costs of consultants and technicians, who are required to monitor wells in remote locations after remediation before permission is given by authorities to close the wells.

Efficiency of Remediation

An Agar Leakwise ID-225 hydrocarbon thickness monitor can be used during remediation to give feedback on the efficiency and success in reducing the thickness of free oil layers. ID-225 sensors installed in large sites can be used to save time and money in remediation activities, by monitoring several wells, the project manager can decide to pump hydrocarbons out of wells with thicker layers.

Remediation Pump Control

In sites with free oil remediation, the ID-221 detector and ID-225 oil thickness monitor can be used to start and stop pumps upon detection of free hydrocarbons layers, thus reducing the amount of water which is pumped and saving on treatment costs. In sites with pump and treat remediation, the ID-221 detectors can be installed in peripheral wells. These detectors will activate pumps in remediation wells which will draw the detected free oil layer by creating a cone of depression.

"Pump and treat" sites are very costly because they mainly treat water for long periods of time. The usage of ID-221 sensors may save much of these costs.

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Skim Control in Oil/Water Separator

Some skimming pumps operated by conductivity sensors will pump substantial amounts of water together with the oil. An ID-225 hydrocarbon thickness monitor installed in a separator can activate the skimming pump at a certain thickness of hydrocarbon layer (for example at 100mm) and stop the pump at a reduced thickness (for example at 10mm). This method ensures that only hydrocarbons and no water will be removed. This will reduce high costs of transporting large quantities of water with the oil, and will cut the water treatment costs.

Protection of Smooth Operation of Air Stripper, Biological Treatment System, Active Carbon

Water with dissolved oil is pumped out of the separator for treatment in an air stripper, biological treatment system or active carbon. A free hydrocarbon layer, which may be present in the water, can clog the air stripper or active carbon, or upset the biological treatment system. An ID-221 oil sheen detector can be installed in a settling tank after the separator and before the treatment system. Upon detection of an oil sheen the water sump bringing water from the separator will be stopped and alarm will be set off.

Monitoring of Water Discharge After Treatment (see also application note #4)

Environmental authorities allow water with only a few PPMs of hydrocarbons to be discharged back into the groundwater or public drainage. On-line PPM monitors are rather expensive and not reliable.
An Agar Leakwise ID-223 oil sheen detector installed in a settling tank mounted on the discharge pipeline will set off an alarm upon detection of an oil sheen and shut the discharge valve. This will indicate to the operator an upset in treatment system and prevent discharge of contamination. In addition, the operator could take manual samples periodically to a lab for PPM analysis and reporting to the authorities.