Pipeline and Process Services

Hydrocarbon Decontamination

Advanced Technology for Removal of Hydrocarbon Deposits from Process Systems

Halliburton has recently advanced the chemical technology for the removal of hydrocarbon “sludge” and noxious substances from process system vessels, pipelines and associated equipment.

Process systems are traditionally exposed to high-temperature steam to provide system decontamination. This type of treatment is often ineffective since steam, or hot water, is inefficient at penetrating relatively thick sludge deposits, and excessive time is often required to achieve desired results. Halliburton has developed a number of effective chemical approaches.

**D-Crude 1™ Agent**

Halliburton D-Crude 1™ agent solution is an effective tool for decontamination of crude oil processing/refining systems. A heated aqueous solution of D-Crude 1 agent is circulated through the process system to effect decontamination. While circulating, the liquid hydrocarbons that coat the walls of vessels and pipes are dispersed and removed by the D-Crude 1 agent. This solution, containing dispersed hydrocarbons, is circulated through a phase separation vessel where the “fast-break” nature of the D-Crude 1 agent allows for hydrocarbon recovery and recirculation of the D-Crude 1 agent. Circulation through the system continues until decontamination is complete.

The speed of the process significantly reduces system shutdown time when compared to conventional steam decontamination methods. Offsite disposal costs are also minimized since the final solution can typically be processed through existing, in-plant systems – with no upsets.

**Typical Physical Properties of D-Crude 1 Agent Solution**

- **Appearance**: Light amber liquid
- **Odor**: Sweet, aromatic
- **Specific gravity**: 1.01 – 1.03
- **Bulk density**: 8.4 – 8.6 lb/gal
- **Solubility in water**: Complete
- **Flash point**: >200˚F
- **pH of 2% solution**: ~ 4.5 – 6.0

**Case History**

An 80,000-gal refinery system, made up of an atmospheric distillation unit and stripper tower, contained residual hydrocarbons and high concentrations of benzene and hydrogen sulfide. Previous steam and mechanical cleaning jobs had taken two weeks or more.

Cleaning and decontaminating with a D-Crude 1 agent solution took only 22 hours to complete. Tests indicated the atmosphere in the system contained 0% hydrocarbon and 0% hydrogen sulfide. The aqueous solution was disposed through the plant sewer system and API separator. Total job time, including rig-up and rig-down time was three days.

**Additional Chemical Cleaning Treatments**

Halliburton Pipeline and Process Services employs proprietary Halliburton chemicals such as surfactants, solvents, inhibitors and passivators that are applied to a wide range of services either in the preoperational, operational or decommissioning phase.

Halliburton’s chemicals such as D-Crude 1 agent, along with Halliburton’s CitroSolv™ or MagSolv™ process work together to help achieve maximum efficiency, safety and economy while minimizing environmental impact.

**Video Inspection Services**

Halliburton Pipeline and Process Services has recently added video inspection to its range of services. Video inspection enables both static and motion video images to be gathered from internal pipelines (2-in. to 48-in. internal diameter), process equipment and rotating machinery. These images facilitate detailed internal inspection of equipment without the necessity of disassembly and subsequent assembly, reducing down time and cost.

Additionally, using video inspection for locating faults or inefficiencies in equipment will assist in the development of your remediation strategy. Video inspection complements Pipeline and Process Services’ hydrocarbon decontamination capabilities and brings the goal of ‘zero manned entry operations’ a step closer.
Our processes are designed to solve cleaning problems on a variety of equipment such as heat exchangers, condensers, piping, boilers, compressors, storage tanks and refinery systems. Halliburton’s materials have been developed based on the most experienced and most advanced technology in the industry. Not only are they highly effective but they are also designed for ease of use. In many cases, Halliburton can offer cleaning solutions that provide multiple cleaning steps such as degreasing, deposit removal and passivation with single-fill technology. Such single-fill solutions provide effective cleaning while minimizing cleaning time, water requirements and waste disposal concerns.

For more information about how Halliburton’s pipeline services can help improve your profitability, visit www.Halliburton.com, contact your local Halliburton representative or e-mail pps@Halliburton.com.