

NORM, Who's NORM?

Naturally Occurring Radioactive Material (NORM) is a byproduct of many oil and gas type refining processes. NORM can be found/identified when producing propane, natural gas, crude oil, propylene, and polypropylene, just to name a few. When the petrochemical material comes from the production wells; through the pipeline; the product, often containing NORM, begins to accumulate along the pipe walls as scale or rouge. As the product then flows through the pipeline into filtering stations the accumulation becomes more concentrated, and therefore generally has higher radioactive concentrations often found around filter pods. As the filters are due for maintenance and changing it is necessary to take proper precautions for the material being removed, as it often contains NORM. The material containing NORM, is ultimately a mix of product, radium, radon, polonium, and lead plus many daughter isotopes that decay and emit alpha, beta, and gamma radionuclides depending on the material and its origins.

Exposure to elevated levels of radionuclides can cause long term health concerns in humans, which therefore lead to precautions to decrease exposure for human health and safety. These precautions include proper PPE, a radiation protection program (followed with a licensed Radiation Safety Officer [RSO] documenting), and the waste disposition being managed appropriately. Radiation plans require all the personnel coming out of the hot zone to be surveyed and be properly decontaminated. Proper filtration and material disposal is just as crucial for proper waste management. From the filter pods the product goes to the refining process (heat exchangers, towers, scrubbers, etc.) which then accumulates additional radioactive and concentrated scale, as it is being separated and heated/burned. As maintenance occurs on the heat exchangers for cleaning, they are contaminated with concentrated NORM containing scale on the inside and outside. So, as the heat exchangers and filters are being cleaned and serviced, the NORM contamination, without proper precautions, is often spread if the proper utilization of collecting the waste from the equipment being washed is not executed. Popular spots for accumulation and spread include down sump drains, spreading from the personnel foot traffic, and contaminated tools, and PPE.

The biggest threat to personnel working with NORM is the inhalation and ingestion of the radioactive hazards. Without a proper respirator program in place, proper personal protection does not exist for the workers operating in and around these potential hazards. Part of the radiation protection program meshed with the Site health and safety plan requires proper radiation training and respirator fit testing on a yearly basis. The vast majority of contamination and personnel hazards can be avoided by limiting and fixing simple inhalation and ingestion exposures and installing best management practices. NORM waste is difficult to deal with and needs to be classified and manifested to the proper accepting facilities. Proper disposal happens through the correct sampling, characterization, and profiling of the waste. Most

facilities cannot process or dispose of NORM waste, so it is crucial to have the proper analytics and knowledge for safe and effective disposal. NORM contaminated waste items are not limited to the scale, sludge, and rouge, but can include machinery, tools, pipe, PPE, and other contact items with the on-site NORM materials, making disposal even more challenging.

IKON has assisted on numerous NORM decontamination, cleanup, and disposal projects related to scale, sludge, rouge, and pipe removal and cleaning. From small pipeline pigging projects to large NORM waste cleanups. Making NORM projects effective and efficient is a hallmark of IKONs work in the NORM field. Tune in to listen to IKON's webinar entitled [*NORM: Who's NORM – A Primer on Natural Occurring Radioactive Material.*](#) Reach out to [Chris Walters](#) for additional information and expertise. We Have Solutions!