## Naturally Occurring Radioactive Material (NORM)

1. **Purpose**

The purpose of this procedure is to establish safe work practices to prevent exposure to naturally occurring radioactive material.

1. **Responsibility**

The safety manager is designated as the program administrator and shall be responsible for coordinating and maintaining the requirements of this procedure.

1. **Source**

The two main types of NORM that exist in the industry are gamma radiation and alpha-beta radiation. It can be found in sources and locations such as:

* Produced water handling, treating, and storage facilities.
* Natural gas liquids.
* Scale in pipe.
* Pipe yards.
* Sludge.
* Gas processing equipment.

The most common radioisotopes that will be encountered are Ra-226, Ra-228, Pb-210, Radon-222 and Polonium-210.

1. **Detection**

Before work begins in the areas listed above, a survey shall be conducted for the presence of NORM. The survey shall provide data on the radiation levels and quantities of radioactive material found.

1. **Protection Against Radiation**

If equipment or facilities are identified by survey to contain NORM at or above the applicable action level, special precautions and procedures such as employee/contractor notification, personal protective equipment use, and other measures will be required

Personnel required to work on or near contaminated equipment or with contaminated materials shall take precautions, receive training, and wear personal protective equipment as follows:

* Avoiding prolonged or repeated close proximity to sources of higher-level NORM contamination will provide satisfactory personnel protection. An adequate safe distance must be established and marked by caution tape by the Safety Manager or Radiation Safety Officer (RSO.) Use as much shielding as possible to reduce the effects of the NORM material.
* Personnel in direct contact with contaminated equipment shall wear gloves and other appropriate protective clothing to prevent skin contact with contaminated surfaces and materials (i.e., scales).
* Personnel shall thoroughly wash hands prior to eating, drinking, or smoking and at the end of work on contaminated equipment.
* A high efficiency respirator for protection against airborne particulate matter must be worn whenever work requires grinding, drilling, polishing, welding, brazing or metalizing on or near NORM contaminated surfaces.
* Do not exceed the maximum allowable workplace exposure limits for radiation of 1.25 R/calendar quarter or approximately 2400 uR/hr averaged over an 8-hour shift.

1. **Contaminated Materials**

Contaminated waste shall be placed into storage containers such as drums or buckets and marked with a label which states "WARNING CONTAINS - NORM SPECIAL STORAGE/DISPOSAL REQUIRED."

Containers shall be placed in secured areas designated for NORM storage only.

1. **Training**

Employees who work with or around contaminated equipment or other materials must receive training on the presence and potential hazards of NORM and protective measures to be taken.