## Ionized Radiation

1. **Purpose**

The purpose of this procedure is to establish safe work practices to prevent exposure to naturally occurring radioactive material. For whom personnel monitoring is required, we will maintain records of radiation exposure and advise each of those employees of their individual exposure on an annual basis.

1. **Responsibility**

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 ionizing radiation 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.

1. **Detection**

Before work begins in the areas listed above, a survey shall be conducted for the presence of ionizing radiation. 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 ionizing radiation 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 ionizing radiation contamination will provide satisfactory personnel protection.
* 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 contaminated surfaces.
* The use of personnel monitoring equipment is required, to include pocket dosimeters or film badges and will be supplied to the employees at no cost to them.
* 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 - IONIZING RADIATION-SPECIAL STORAGE/DISPOSAL REQUIRED."

Containers shall be placed in secured areas designated for ionizing radiation storage only and signs stating "CAUTION - RADIATION AREA" must be clearly visible from all sides. The conventional radiation caution colors and trefoil must be used.

1. **Training**

Employees who work with or around contaminated equipment or other materials must receive training on the presence and potential hazards of ionizing radiation and protective measures to be taken and on the applicable provisions of this safety program. To include:

* Safety problems associated with exposure.
* (ALARA) keeping exposure limits as low as possible.
* Occurrence of radioactive materials.
* Limiting exposure by limiting exposure time, distance and using shielding.
* Employees must be familiar with the actual sound of the emergency alarm.

All reports of radiation exposure are available to employees upon request.