



Effective: 9/5/2007
Revised: 11/11/2010
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PURPOSE

The purpose of this procedure is to insure personnel and environmental protection from NORM during maintenance activities; to identify, track and control NORM contaminated equipment and waste; and to prevent the spread of loose NORM material to uncontrolled areas.

SCOPE

This procedure applies to all Resolute Forest Products personnel and contractors who may come into contact with loose/exposed NORM material during maintenance activities.

DEFINITION

1. **Background Radiation** – The ambient radiation field to which we are exposed daily, originating from cosmic rays, naturally occurring radioactive materials (Potassium-40, uranium, thorium, etc.) and human endeavors (fallout). This radiation field is variable and causes a survey meter to respond in the absence of NORM. Background radiation at the Calhoun ranges from 2-12 microroentgens per hour ($\mu\text{R/hr}$).
2. **Breaching a system** – The act of opening a closed system (breaking into a pump, piping run, valve, tank, deculator, etc.) where personnel could be exposed to or come into physical contact with NORM contamination.
3. **Caution sign** – A sign that conveys the message that loose NORM material may be present in an area that personnel could come into physical contact with. The background color of NORM caution signs shall be yellow. The wording on the signs shall be of the colors purple, magenta, or black. Caution signs shall be sized so that they are easily readable. An example of appropriate wording on a caution sign is “Caution: NORM Contamination. Authorized personnel only. No eating, drinking, or chewing allowed”.
4. **Frisk** – The act of using a survey meter to check for NORM contamination on personnel and clothing.
5. **Loose NORM material** – NORM contaminated scale, sludge, white water, dust, grindings, liquids, debris or other materials that is not contained in a closed system or container.
6. **Microroentgen per hour ($\mu\text{R/hr}$)** – A unit used to measure the amount of exposure to gamma radiation. The amount of gamma radiation a person is exposed to in microroentgens per hour is measured using a portable survey meter.
7. **NORM** – Naturally Occurring Radioactive Material that has been concentrated through a technological process, such as the making of pulp & paper. Naturally occurring radium from our water supply, clay, and pulp is concentrated in different locations of production equipment during the paper making process. Pumps, pipes, valves, and other equipment that read twice background levels are considered NORM contaminated. A list of equipment containing twice the background levels of radium is available in the Environmental Department.
8. **Personal Protective Clothing** – Normal mill PPE, including gloves, shall be worn when working with loose NORM material. Other types of protective clothing (coveralls, hair caps, rubber boots, shoe covers, etc.) should be used when the potential exists for personal clothing or skin to come into contact with loose



NORM material. Any openings between the arm, sleeves, gloves, pants legs, and foot coverings or boots should be taped and seal closed. When working with or around loose norm, correct respiratory PPE is required to prevent breathing in any fine particles of NORM containing material.

ROLES & RESPONSIBILITIES

The Environmental Department will be responsible for the following:

- serve as a reference for Operating and Maintenance Departments prior to the removal, modification, or repair of suspect NORM containing material
- employee training & documentation
- documentation of NORM containing equipment lists and NORM surveys
- approve disposition (including documentation) of NORM containing material for management and organization where NORM containing material will be stored prior to decontamination and removal from the Calhoun site
- vendor approval (with assistance from the Purchasing & Safety Department)
- Create manifests to track NORM material that has left the Calhoun site. A copy of the manifest will be kept on file in the Environmental Department.

The Operating and/or Maintenance Departments will be responsible for the following:

- proper planning of demolition, modification, and repairs to physical equipment prior to beginning work
- obtain all the necessary containers, bags, tags, protective clothing, and tools prior to work
- communicate the hazards associated with the job to involved operators and maintenance technicians

The Purchasing Department will be responsible for the following:

- assist the Environmental Department with vendor selection

The Safety Department will be responsible for the following:

- serve as the mill Radiation Safety Officer
- assist the Environmental and Purchasing Department with vendor selection and qualification
- properly maintaining and having survey equipment available
- frisking
- ensure that contractors used to demo, modify, and/or repair physical equipment containing NORM material have received the proper training

PERMITS

A copy of the Calhoun mill NORM permit is available in the Environmental Department.

AUTHORIZED VENDORS & POLICY TO CHANGE AUTHORIZED VENDORS

The following vendor(s) have been approved to remove scrap material, not containing NORM, from the Calhoun site. Any scrap material company not listed below must be approved by the Environmental Department and Purchasing Department before they are allowed to remove any material from the mill site.



Scrap Material Vendors:

Future Solutions
Dwain Exline
704-400-3277

The following vendor(s) have been approved to decontaminate NORM containing material. Any decontamination company not listed below must be approved by the Environmental, Purchasing, and Safety Departments before they are allowed to do any work.

Chase Environmental
Oak Ridge.
Jim Cabage 865-310-9448

POLICY AND PROCEDURE

The following basic NORM Standard Operating Procedure should be used whenever NORM contaminated equipment, pipe, valves or systems reading at least twice the background levels are being breached (broken into). All personnel involved in maintenance activities that require breaching of NORM contaminated equipment must first receive training in the hazards of exposure to radiation and contamination. The Training Department will be responsible to keep a record of all employees who have received training.

- A. Before breaching (breaking into) a system to perform maintenance or to remove pipes, valves, or equipment, notify the Environmental Department. The Environmental Department will determine if the pipe or valve is in an area of the plant where NORM contamination has been identified. Areas identified in the past include the paper mill, groundwood, TMP, Utilities, and Recycle. Contact the Environmental Department for a list of equipment reading twice background levels in these areas.
- B. Establish a boundary around the NORM work location to limit access. Yellow radiation barricade tape should be used. The boundary should be kept as small as possible, but large enough to allow for personnel

and equipment access the work area and to allow for all work to be accomplished in a safe manner. Containers should be provided to discard protective clothing and contaminated trash at the exit from the work area. Containers, bags, drop cloths, tags, and protective clothing will be provided by the Maintenance and/or Operating Department. The Environmental Department will arrange for the disposition of these containers.

- C. Post the boundary with radioactive or radiation barricade tape so that employees can see them from all entrances and passageways. Any signs used should be yellow with purple, magenta, or black letters and should convey the message of NORM contamination in the area. Signs and radiation barricade tape are available from Stores or the Environmental Department. An example of appropriate wording on the postings is "Caution: NORM Contamination. Authorized personnel only. No eating, drinking, or chewing allowed". Other wording may be used as long as they convey the message of NORM contamination in the area.
- D. Personnel who have the potential to come into contact with loose NORM material (NORM contaminated scale, sludge, white water, dust, grindings, liquids, or other debris) shall wear personal protective clothing. A minimum of normal mill PPE, including gloves, shall be worn when breaching NORM contaminated equipment or systems. Other types of protective clothing, as described in the definitions, may also be used when the potential exists for personnel clothing to become soiled with NORM contaminated material.
- E. When the potential exists for loose NORM material (NORM contaminated scale, sludge, dust, grindings, liquids, or other debris) to fall out of a pipe, valve, or system during the breaching process, a disposable plastic drop cloth shall be used to cover the immediate work area to facilitate cleanup and prevent spreading of loose NORM material. The cover should be made of a waterproof type material capable of withstanding the work activities involved without tearing or ripping. Alternatively, a suitable drip tray or catch pan may be used. The cover should be sized to provide for the containment of leakage and waste, and to allow ample room for peripheral related work.
- F. When necessary, a plasma torch should be used as much as possible to cut pipe, valves, and equipment. It is recommended that port-a-band sawing, wire brush, and grinding be held to a minimum when working with NORM contaminated systems. The potential for NORM contaminants to become airborne is less when using a plasma torch than it is when using a port-a-band saw, or when wire brushing or grinding. When using a port-a-band saw, wire brushing, or when grinding, the component should be wetted down whenever possible. Use a fine low-pressure spray such as that from a garden spray can. Generally, any material, which is damp, moist, or wet, will not become airborne.
- G. If pipe, valves, or equipment are to be removed from a system, seal any open ends using tape, plastic sheeting, flanges, or other materials.
- H. Mark or label any removed components with a blue "X" to signify NORM contamination. Markings may be accomplished using a paint stick or grease pencil. Ensure that the marking is visible and readable.
- I. Bag and tag all waste material (scale, sludge, dust, grindings, tape, plastic sheets, etc.). Do not drop the waste material or plastic sheeting to a lower level. Collect and seal the material in a plastic bag or container. The bag or container must be labeled as follows: "Caution: NORM".
- J. Bag and tag all protective clothing used, including gloves, in the same manner as the waste material. Do not take contaminated, disposable clothing home.
- K. If loose NORM material existed within the work area, request the Environmental Department to perform a loose surface contamination survey of the area. The Radiation Safety Officer or designee will be requested by the Environmental Department to conduct the survey. Rope and barricades should not be taken down until the work area has been verified free of loose surface contamination.



- L. Pipe, valves, and equipment which have been determined to be scrap metal and which contain NORM contaminated material, should be placed at the on-site designated storage area. Contact the Environmental Department for disposition of NORM contaminated scrap metal.
- M. Bagged waste material should be delivered to the Calhoun Mill Salvage Yard. Contact the Environmental Department for disposition of NORM contaminated waste material.
- N. The Environmental Department will arrange for the decontamination of any NORM material with assistance from the Purchasing Department. No material will be decontaminated on the mill site. All work must be done at an off-site location designed for this activity. Once the decontamination process is completed, the Environmental Department will work with the Purchasing Department to have an approved scrap metal dealer pick up the clean material. Manifests will be created at this point for record keeping purposes.

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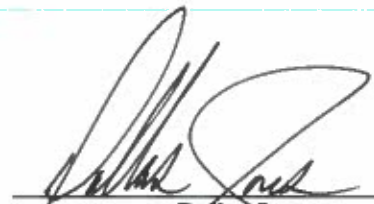
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Approval Signatures:



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