



Information material NORM/LSA



HSEQ

Health, Safety, Environment & Quality

NORM/LSA



Work safely or do not work at all

Work may only be started after Noordgastransport has granted permission. Read your work permit carefully and check that the risk-control measures described in it are indeed in place. Then take the risk-control measures required for the job you are going to undertake.

**STAY ALERT ON THE JOB.
IF IN DOUBT: ASK. DO NOT
START THE JOB OR, IF YOU
HAVE ALREADY STARTED, STOP!**

Since the first successful well on the Dutch continental shelf in 1970, Noordgastransport B.V. has grown into one of the largest transporters of natural gas extracted offshore. The company has ample expertise and experience and is continuously working towards the development of new techniques and improved methods. In doing so, safety always takes priority. Noordgastransport, therefore, wants all its employees, contractors and suppliers to pay the utmost attention to what we mean with 'putting safety first' and expects them to make a conscious contribution toward it.



NORM/LSA



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At Noordgastransport radioactive substances can be encountered when opening the installation. 'Naturally Occurring Radioactive Material' (NORM) or 'Low Specific Activity' (LSA) are the collective names for these naturally occurring radioactive substances which may be released during the production of oil and natural gas. Traces of these substances have been present in the formations from which oil and natural gas are extracted ever since the earth was formed. During the production process they can be brought along to the surface, either as a gas or as salts (dissolved in water or in a solid state). The radioactive substances can accumulate (in sludge) in some installation components or form accretions (scale) inside pipes, tanks and vessels.

What are the characteristics of NORM/LSA?

- Invisible and odourless
- Measurable using special equipment
- Health hazard
- Environmental hazard

Where, when and how can you come into contact with NORM/LSA?

- When a closed system or installation leaks liquids and/or gases.
- When a closed system or installation is opened.

Gaseous:	radon
Liquid form:	(watery) sludges
Solid form:	scale



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Radiation risks

The radiation dose you are likely to receive due to NORM/LSA is low and not harmful. However, radiation caused by NORM/LSA can pose a health risk in the case of:

- Regular and long-term exposure to relatively small doses of radiation.
- Direct internal contact with NORM/LSA.

Preparations for the job

Before you start work, the Radiation Expert will explain the risks involved. During the job itself, he will take contamination measurements at the workplace.

- Make sure that you know and understand all the risks of the job.
- Take all the prescribed risk-control measures.
- Use the proper PPE, and make sure it is in good condition.

The Radiation Expert

- Decides what precautions regarding radiation hygiene must be taken during the job.
- Is present at the workplace
- Takes contamination measurements.
- Sees to it that the radiation hygiene measures are observed during the job.
- Provides advice on how to prevent radiation leaks, spills and contamination.

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While the job is underway

- Prevent sludge spills. Use spill basins.
- Prevent the dispersal of radioactive dust particles; no dry grinding or brushing.
- Make sure that wherever possible the surfaces to be treated are kept wet.
- Store and dispose of NORM/LSA-contaminated components in accordance with the applicable instructions.

What personal protective equipment?

- Basic PPE.
- Non-porous gloves.
- Disposable overalls and rubber safety boots.
- If dust is produced: full-face masks with independent breathing protection.
- During welding (evaporation product): pressurised welding mask with breathing air supply.

The required PPE is specified in your work permit.



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Personal hygiene

- Wash your hands before eating, drinking, smoking or using the toilet.
- Beware of contamination of your PPE and avoid any spreading of NORM/LSA when removing, undoing or disposing of your PPE.
- The Radiation Expert checks the PPE for NORM/LSA contamination.

Contamination with NORM/LSA

External: on the skin through contact with sludges (from bottoms of tanks and vessels) and scale (on the insides of piping).

Internal: as a result of inhaling dust between flanges, dust particles released during maintenance work or as a result of evaporation during welding.

Internal: as a result of swallowing splashes of sludge or due to eating food contaminated by hands.



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What to do in case of contact, inhalation or swallowing?

Always warn the Radiation Expert immediately.

EXTERNAL CONTACT

Wash the contaminated areas thoroughly. In most cases, no contamination will be measured after this has been done.

INTERNAL CONTACT

Some substances are excreted by the body; others are not. Any form of inhalation or swallowing must be avoided. If it nevertheless happens? Act in accordance with the relevant work instructions and immediately notify the Responsible Radiation Expert (RRE).

Questions? Additional information? You can always ask the person in charge.





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