



IGas Energy PLC

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NORM Local Rules Working with Ionising Radiation Procedure



Notice

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| | Regulations 2016 as amended by EPR18. | | | | |
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**Key parties are specified for ease of reference. But the formal review and approval process is logged within the M-Files systems.*

Review Log

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ABBREVIATIONS

| Acronym | Meaning |
|----------------|---|
| CDG11 | Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations 2009 (including the 2011 amendment) |
| DGSA | Dangerous Goods Safety Adviser (IGas) |
| DMS | Document Management System. The IGas DMS is called M-Files |
| EA | Environment Agency |
| EPR16 | Environmental Permitting (England and Wales) Regulations 2016 as amended by EPR18. |
| HSE | IGas Health, Safety and Environment Department (typically noted as "HSE") |
| HSEx | Health and Safety Executive (governing body) |
| IMS | Integrated Management System |
| IRR17 | Ionising Radiations Regulations 2017 |
| IGas | IGas Energy Plc IGas refers to all (UK based) trading entities that exist under the group. |
| M-Files | The IGas Document Management System (DMS) |
| NORM | Naturally Occurring Radioactive Material |
| RMS | Radiation Management System |
| RPA | Radiation Protection Adviser (appointed via Aurora) |
| RPS | Radiation Protection Supervisor (IGas) |
| RWA | Radioactive Waste Adviser (appointed via Aurora) |

1. SCOPE

These Local Rules set out the general principles and means by which the IGas Energy group of companies will seek to comply with the requirements of the Ionising Radiations Regulations 2017 (IRR17) and the Environmental Permitting (England and Wales) Regulations 2016 (EPR16) as amended by EPR18. These local rules cover work with ionising radiation involving Naturally Occurring Radioactive Material (NORM) at facilities under the ownership and management of the IGas Energy plc Group (IGas).

Naturally Occurring Radioactive Material will be referred to as NORM throughout this document.

2. LOCAL RULES

2.1. Personnel Responsible for Radiation Protection

Authorised Workers are those individuals who have read these Local Rules and have been authorised by the RPS to carry out work with NORM contaminated items or materials which includes plant and equipment.

The Authorised Worker duties include:

- Working to the requirements of this document, relevant Risk Assessments, Method Statement and/or IGas Permit to Work.
- Notifying the RPS if they are uncertain of the actions to take with regard to radiological protection.
- Notifying the RPS if they observe a breach in procedures or cannot follow the procedures for any reason.

2.2. General Rules

It is the duty of all employees and contractors of IGas to not knowingly expose themselves or any other person to ionising radiations unnecessarily. Employees authorised to control/carry out the work must be issued with a copy of these Local Rules and receive instruction as to their content and requirements. No intrusive work with NORM contaminated equipment may be carried out unless it is covered by a current radiological risk assessment (See Appendix 3).

2.3. Designation of Persons

With the radiological controls in place, IGas work with NORM is not likely to result in employees and contractors exceeding a 1mSv annual dose limit NORM. Consequently, there is no need for any IGas employee and contractor undertaking NORM related work to be designated as a Classified Person.

2.4. Area Description and Designation

The areas where NORM material or equipment is stored on sites are designated as Controlled Areas. These areas are cordoned off to prevent unauthorised access with signage displayed indicating that access is restricted and that the area within the boundary contains Naturally Occurring Radioactive Material (see below). The designation is primarily to control the potential for contamination although localised dose rates can be associated with scale – these usually reduce with increasing distance from the object.



Work activities may require that additional areas are temporarily designated as Controlled Areas and these must be identified via risk assessments, method statements and Permits to Work relating to the task. An example of where such an area would be required, would be to carry out the decontamination of NORM contaminated items.

If it is necessary for any persons who enters or works in an area to follow special procedures designed to restrict significant exposure to ionising radiation **or** if the dose rates in the area exceeds 7.5µSv/hr when averaged over the working day **or** when the instantaneous dose rate exceeds 100 µSv per hour **or** if there is a risk of spreading significant radioactive contamination outside the working area then a controlled area must be designated.



2.5. Arrangements for Restricting Access to Designated Areas

- i. Entry into any designated area is restricted to individuals who are authorised and trained to do so and having received permission from an IGas RPS. This applies to all personnel including contractors and sub-contractors.
- ii. In the case that Classified Persons from another employer (Outside Worker), (non-IGas personnel) need to carry out work in an IGas Controlled Area they must provide proof of their classification status and must submit their Radiation Passbook to the RPS before being allowed access. Information should be shared with employers of outside workers in advance of any work taking place. This will ensure that the most appropriate workers are chosen to carry out the work.
- iii. Entry into any Controlled Area by Non-Classified persons must be in accordance with the Written Arrangements (See Section 4 of these Local Rules).
- iv. Any Controlled Area must remain under the supervision of the RPS whilst work is being carried out in the area. All Controlled Areas must be secured at the end of each working day to prevent unauthorised access.

2.6. Working Instructions

For specific work tasks, a Controlled Area may be temporarily designated and if so, the area should be demarcated with access control points set up and signage displayed appropriately. Contamination control arrangements should be implemented where necessary to limit the migration of any NORM contamination that could be present.

Those working in controlled areas must be given specific training in connection with the characteristics of the workplace and the activities within it.

The following should be observed:

- i. Eating, drinking or smoking in the Controlled Area is strictly prohibited.
- ii. Only equipment and materials necessary for the work should be taken into any Controlled Area.
- iii. Prior to entering the Controlled Area the following Personal Protective Equipment (PPE) must be worn but not limited to:
 - PPE in line with IGas site requirements as may be revised;

- One-piece coverall
 - PVC gloves
 - Any other PPE identified in a specific method statement or risk assessment.
- iv. The following materials must be made available for the personal hygiene and the cleaning of equipment:
- Dry wipes suitable for the task at hand
 - Non-solvent based hygiene wipes
 - Clear plastic bags suitable to contain the material without allowing the escape of contaminants.
 - Immediately on exiting the work area and before the removal of any PPE, individuals must be monitored for contamination by the RPS or suitably trained designated person.
 - At the end of the work period, each person must have their PPE checked for contamination by monitoring and if found to be contaminated then the PPE must be removed and placed into a plastic bag marked with a clear warning of the nature of the contents. All bags must be sealed and placed in to a suitable container, which is left in the Controlled Area and clearly marked as to its contents.
 - Hygienic face/hand wipes are provided for personnel to wash down potentially exposed areas of skin i.e. face and hands.
 - All equipment used in the Controlled Area will be checked for contamination prior to removal from the area by the RPS. Where contamination has occurred, it should be decontaminated prior to removal in a previously designated decontamination area.
 - On completion of the work, contamination monitoring must be carried out on additional areas that may have been temporarily designated as Controlled Areas for the purpose of completion for the tasks.
 - If contamination levels in the temporarily designated area remain above background levels then restrictions must remain in place and the RPS consulted.

On completion of the work and confirmation via monitoring that no contamination is present, then the temporarily designated area can be de-designated.

2.7. Monitoring

Radiation dose rate and contamination monitors must be available at all times when work with NORM contaminated equipment or materials are being carried out. For routine tasks that require breaking of containment at a site with no history of NORM, then a recorded check for the presence of NORM shall be carried out at monthly intervals and registered by the local RPS. If the presence of NORM is known, then checks should be carried out at every break of containment.

- i. The radiation dose rate and contamination monitors shall be intrinsically safe (IS) when used in a hazardous area. If Non-IS equipment is to be used then an appropriate permit to work will be required.
- ii. Radiation monitoring equipment must be maintained and tested annually.
- iii. Radiation dose rate and contamination monitoring must be carried out in all designated areas and at their boundaries and records of the monitoring must be made (see below).
- iv. If general area dose rates outside the boundary of the Controlled Area are measured in excess of 7.5 $\mu\text{Sv/h}$ the work must be suspended and the Management, RPS and RPA informed.
- v. Measurement of any radiation dose rate indicating the presence of NORM on new items of plant or equipment should be notified to the RPA (a reading twice the instruments background response is indicative of NORM being present).
- vi. Contamination monitoring should be carried out:
 - at the work location prior to work commencing.
 - of persons (i.e. PPE before removal) exiting the Controlled Area.
 - of equipment before removal from the Controlled Area.
 - of re-usable PPE after cleaning.

- at the work area on completion of the work prior to de-designation, and;
- at any location where it is suspected that contamination could be present.

Records of the above monitoring must be created and retained. The following information should be recorded:

- Site.
- Location on Site.
- Date.
- Time.
- Name of person carrying out the monitoring.
- Brief details of the monitoring carried out.
- Levels recorded.

Where NORM contaminated materials are being stored then radiation monitoring to confirm the boundary of any designated Controlled Area must be carried out by the RPS, periodically or if any significant changes occur, and the results of the monitoring recorded as above. An inspection of the condition of contamination control arrangements (package wrappings, end caps and signage) should also be made and confirmed to be satisfactory in the monitoring record.

Stored contaminated materials should be inspected regularly (at least once per quarter) to confirm the oncoming adequacy of protection, i.e. end caps still present sheeting secure down and in good conditions etc.

2.8. Dose Investigation Level

The 'dose investigation level' set by IGas is a whole body radiation exposure of 1mSv

A formal investigation will be carried out together with Management, the RPS and the RPA if any employee has received or is suspected of having received an effective dose or equivalent dose in excess of the above value. Prospective doses will be assessed by the RPA prior to any new work (i.e. work that has not been done before) being carried out. If in doubt, contact the RPA.

3. WRITTEN ARRANGEMENTS FOR NON-CLASSIFIED PERSONS ENTERING A CONTROLLED AREA

3.1. Nature of Work in the Controlled Area

The Controlled Areas identified are those used for storage of NORM items, equipment or wastes and others as identified in specific assessments and method statements. Note: additional Controlled Areas may be designated in line with work requirements and the procedures below will apply to these areas. As no IGas personnel have been designated as classified persons **this section applies to all persons working with NORM affected equipment or materials.**

1. Every individual should confirm that they have read, understood these local rules and are willing to work to them. Any areas of uncertainty should be discussed with the RPS and the matter clarified and resolved prior to NORM work commencing.
2. No person shall enter a Controlled Area unless the RPS on site has authorised the entry and all non-classified persons must sign the record of entry (see Appendix 1)
3. PPE to be worn by Authorised Workers and checked by the RPS or their designate for correct application prior to entering the Controlled Area.
4. Eating, drinking and smoking are strictly prohibited in the Controlled Area.
5. Hand to face contact should also be minimised when in the Controlled Area.
6. Work period to be recorded i.e. time of entry and exiting the Controlled Area.
7. All work to be carried out in accordance with the Local Rules, Working Procedures/IGas Permit to Work system.
8. Training

All Persons working in designated controlled areas or carrying out any work involving NORM or the potential for NORM to be present shall undertake training as prescribed by IGas and the IGas RPA (Aurora). There will be three levels of training:

1. NORM Awareness for persons who will be supervised at all times. The content of this training will make staff aware of the possible presence and dangers associated with NORM, and what precautions to take to protect themselves, others and the environment.

2. Tester training will be given to persons who carry out work where there is a requirement for testing of the presence of NORM. They will understand when and how to use monitoring equipment and the procedure to be followed if NORM is discovered at levels above twice background.
3. RPS training for persons who carry out the duties of Radiation Protection Supervisor. They will understand the role and responsibilities of RPS and the IGas procedures that apply to NORM.

This training shall be certificated and refreshed at a period not exceeding 3 years or at any time when there are significant changes to the legislation, hazards or work practices.

4. CONTINGENCY PLANS

If it is suspected that any person has been significantly exposed, the RPS and RPA must be informed immediately enabling an investigation to be carried out into the circumstances and actions to be taken.

The following have been identified as being reasonably foreseeable events and occurrences that are relevant to these Local Rules:

- a) Personal injury whilst working with NORM contaminated material in a controlled area,
- b) Site Emergency/Site Alarm sounds,
- c) Spillage of NORM contaminated materials, solids or liquids,
- d) Fire involving NORM materials, and;
- e) Loss or theft of NORM material.

And these five issues are detailed in the sub-sections below.

4.1. Personal Injury Sustained

- a) Personal injury sustained whilst working in the Controlled Area:

Minor injuries i.e. cuts and abrasions

- Remove the individual from the Controlled Area

- Notify the appropriate line manager and report to a First Aider.

Serious injuries i.e. fractures, loss of consciousness

THE NEED FOR LIFE SAVING MEDICAL TREATMENT SHALL ALWAYS TAKE PRIORITY OVER ANY ISSUES IN REGARD TO RADIOACTIVE CONTAMINATION.

- All work must be suspended and if possible the area made safe.
- Alert First Aider.
- On arrival of the medical team the RPS shall brief them as to the hazard.
- Assist in removing the casualty from the Controlled Area.
- Contact Management, the RPS and RPA for further advice.

4.2. Site Emergency /Site Alarm Sounds

b) In the event of a site alarm sounding or other emergency situation that requires the evacuation of the area(s).

- i. All work must cease immediately and workers must be instructed to leave the Controlled Area.
- ii. PPE should be removed where possible but this will depend on the incident and the risks to individuals. In the event of a life threatening occurrence do not stop to remove PPE when moving to a safe area.
- iii. All equipment should if possible be shut down, isolated and depressurised but as above this will depend on the incident and the risks to individuals remaining in a hazardous location to carry out these tasks.

4.3. Spillage of NORM Contaminated Materials – Solids/Liquids

c) Any loss of containment/spillage is likely to be small i.e. involving volumes of a cubic metre to a maximum of a few cubic metres for produced waters, or less than a cubic metre for oily sludge and scale residues.

Actions related to loss of containment of NORM contaminated materials i.e. a spillage:

- i. In the event of a spillage of NORM contaminated materials, actions should be taken to minimise any spread of contamination. If migration of the NORM contaminated materials to any

waterway, drain or watercourse is considered likely then localised barriers (bundling) must be used to contain the spillage and drain covers should be used.

- ii. The RPS or designate must carry out contamination monitoring to identify the extent of the area contaminated.
- iii. If contamination is found then the area must be barricaded off and access prevented.
- iv. Wearing the specified PPE, the area must be decontaminated and any waste material placed in clear plastic bags that are clearly identified as to the contents.
- v. Continue monitoring and cleaning until all readings measure background levels.
- vi. Contact the RPS and RPA for further advice.

4.4. Fire involving NORM Contaminated Materials

- d) NORM bearing wastes are either water based (produced water) or hard scales of oily sludge's. Only the oil bearing wastes are considered a fire hazard with the potential to ignite, although this is also considered to be a very low risk.

In the event of fire involving NORM contaminated materials:

- i. Evacuate the immediate area.
- ii. Contact the Fire Service and cordon off access to the area.
- iii. Prior to fire services arriving at the affected site, notify the Fire Service that NORM material is involved but the radiological risks posed are very low and should not affect the fire fighting approach.
- iv. Consider blocking off any local drains based on the oil hazards and prevention of the spread of waste contaminated water fire water – take advice from the Fire Service.
- v. Cordon off the area and prevent access after the fire has been dealt with by the fire service
- vi. Contact the RPS and RPA for further advice.



4.5. Theft or Loss of NORM Contaminated Materials

- e) Loss or theft of NORM contaminated waste is considered extremely unlikely as it is held on a secure site and has no intrinsic value. Movement of these materials requires significant manual handling and perhaps lifting equipment.
 - i. If it is suspected that contaminated items or material have been removed from the Controlled Areas by unauthorised individuals then the circumstances must be investigated immediately.
 - ii. Contact the RPS and the RPA.
 - iii. If loss or theft cannot be ruled out then IGas should contact the Police and the Environment Agency informing them of the loss/theft.

4.6. Flooding involving the storage of NORM Contaminated Materials

This section will need completion only if the Flood risk assessment indicates this is applicable for any of the storage locations. If not then say so.

5. EMERGENCY CONTACTS

In the event that NORM contaminated equipment is lost, or has been damaged resulting in a release of radioactive materials offsite then the Environment Agency must be notified as soon as practicable.

Contact the Agency using the number below and inform the operator **“a reportable event has occurred involving radioactive material (NORM) which is subject to an Environmental Permit”**.

Environment Agency Contact details

National Customer Contact Centre
PO Box 544
Rotherham
S60 1BY
Tel: 0800 807060 (Free phone 24 hours service)



APPENDIX 1: RECORD OF ENTRY

I have read and understand the Local Rules and Written Arrangements for access of non-classified persons and I agree to comply with the procedures detailed in the Local Rules.

| NAME | EMPLOYER | SIGNATURE | DATE |
|------|----------|-----------|------|
| | | | |
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APPENDIX 2: RADIATION PROTECTION CONTACTS - SUPERVISOR, ADVISORS ETC...

Radiation Protection Supervisors (RPS) – IGas

The names of the IGas RPS can also be found on the Competent Persons Matrix

(IRR17) reg 18(5)
Gregg Shipman
Richard Whiting
Brian Moore
Gary Chapman
Marc Toyne
Tony Wadsworth
Paul Wilson

Role of the RPS

The RPS will ensure that:

- No work with NORM affected material, plant or equipment commences unless it is covered by a current radiological risk assessment – see appendix 3.
- Individuals required to work to these local rules have been provided with a copy of them and have read them.
- The RPS should ensure that each individual is satisfied with what they have to do to work to the local rules. If issues cannot be resolved, do not commence work and consult with the HSE Specialist and RPA.
- All hand held radiation monitoring equipment is in test and is working satisfactorily.
- Radiation dose rate and contamination monitoring is carried out and the results recorded.
- Contamination controls and designation of areas are fully implemented through the use of ground-sheeting, creation of temporary bunds, physical barriers and signage.
- The Record of Entry sheet for access to controlled areas is completed.
- Where samples are taken, the date and location are recorded and a unique number assigned to the sample for identification.
- The sample is packed in a secure container designed to retain its contents.
- Samples are only removed from the originating site once approved by the IGas DGSA.



- All identified NORM contaminated items are appropriately wrapped (polythene) end-capped (tubulars) and placed in secure banded storage and the NORM Contaminated Items Register updated
- Any accidents or incidents are reported on the OSHENS system.
- Any non-compliances are noted and reported to IGas HSE Specialist.



Radiation Protection Adviser (RPA)/Radioactive Waste Adviser (RWA) - Aurora

1. RPA: Robert Hill

Aurora Health Physics Services Ltd (Aurora)
Tel: 01235 820049
Mobile: 07958 517154

2. RWA: James Cairns

Aurora Health Physics Services Ltd (Aurora)
Tel: 01235 820049
Mobile: 07557 161443

All persons authorised to carry out work with Naturally Occurring Radioactive Materials (NORM) must be familiar with the Local Rules before commencing work. Employees and contractors must sign to confirm they understand the arrangements in place. These signed records are kept electronically within M Files.



APPENDIX 3: CURRENT RADIOLOGICAL RISK ASSESSMENTS

IGas has a number of prior radiological risk assessments, which cover identified work with ionising radiation. These risk assessments are stored and accessed via the online documentation system (M-Files).

You should familiarise yourself with the applicable risk assessment prior to work commencing. If your work is not catered for in one of these risk assessments then do not commence work and in the first instance contact the RPS or the HSE Specialist.

Risk assessments should be reviewed if there are any significant changes or at 3 year intervals.

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[..\..\..\26000-26999\26620\L\L\PRD.RA.783 - Monthly Survey of N.O.R.M. Storage Areas - Welton - 00 \(ID 26620\).xlsx](..\..\..\26000-26999\26620\L\L\PRD.RA.783 - Monthly Survey of N.O.R.M. Storage Areas - Welton - 00 (ID 26620).xlsx)

[..\..\..\516000-516999\516881\L\L\PRD.RA.843 - Cleaning of NORM Contaminated Tubes {2} Pipes - Welton - 00 \(ID 516881\).pdf](..\..\..\516000-516999\516881\L\L\PRD.RA.843 - Cleaning of NORM Contaminated Tubes {2} Pipes - Welton - 00 (ID 516881).pdf)

[..\..\..\26000-26999\26622\L\L\PRD.RA.785 - Handling of N.O.R.M. Waste in Sealed Drums \(not by road\) - Welton - 00 \(ID 26622\).xlsx](..\..\..\26000-26999\26622\L\L\PRD.RA.785 - Handling of N.O.R.M. Waste in Sealed Drums (not by road) - Welton - 00 (ID 26622).xlsx)

[..\..\..\26000-26999\26623\L\L\PRD.RA.786 - Cleaning of N.O.R.M. Contaminated Vessels {2} Tanks - Welton - 00 \(ID 26623\).xlsx](..\..\..\26000-26999\26623\L\L\PRD.RA.786 - Cleaning of N.O.R.M. Contaminated Vessels {2} Tanks - Welton - 00 (ID 26623).xlsx)