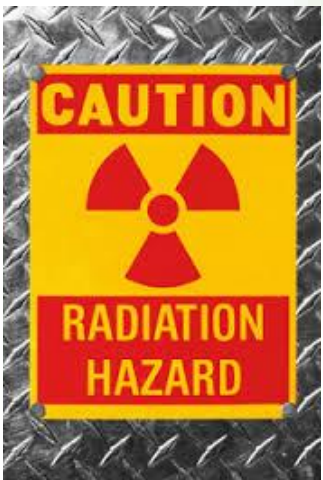




# The role of the RT Level III in industrial Radiation safety.

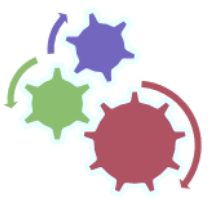




Presented by:

**Hennie de Wet.**  
ASNT & ACCP Level III.  
RPO.

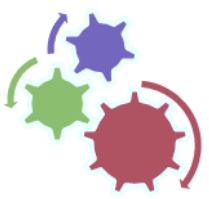




# Overview.

Introduction.  
RPO & ARPO.  
Documentation.  
The building.  
RT Technicians.  
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Conclusion.  
Questions.





## Introduction

The RT Level III will have a great deal of experience in Radiation Safety and would have done all the necessary exams and registrations.

Some NDT companies use their appointed RT Level III as the Alternate Radiation Protection officer (ARPO).





The Department of Health (DoH) Directorate Radiation Safety, is not too keen on this as they would like both the RPO & ARPO to be permanent employees.

However, the law states that, the RPO (Radiation Protection officer) needs to be the owner of the company or a full-time employee.





BUT the ARPO may be a permanent employee or contractor.

The issue is that 2 qualified RT Level II's will each demand a market related salary.

This is a huge expense for a small NDT company.

The Level III is on a retainer already, and this is usually less than a RT Level II's salary.





When the Level III accepts the ARPO appointment, you know things will get done properly.

Your (inexperienced) RPO will be guided and trained through the system.





Radiation safety in South Africa has almost become a full-time job.

There is so much paperwork and you should stay on top of things, else your employer may lose the authority.

**So where do we begin?**





4/14/2008



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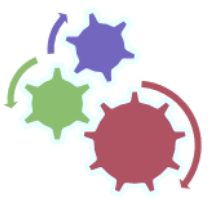
## Documentation.

First you need to apply for an authority, you don't just get one. Form **RN 787** needs to be completed and submitted to the Department of Health (DoH).

This is where your RT Level III comes in. He probably has the cellphone number of the contact person at DoH, and can speed things up a bit.

No, not bribery and corruption ... just speed things up a bit.





## Documentation.

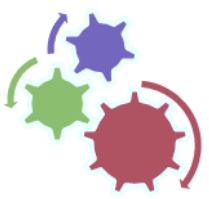
You also need to notify DoH whom the personnel are you wish to appoint as **RPO & ARPO** using form **RN 785**.

Please remember that these guys need to be RT Level II with at least 2 years of experience.

Unless, of course, he is the owner of the company.

BUT not just a qualification certificate from 2 years ago, their NDT Logbook has to reflect those hours.



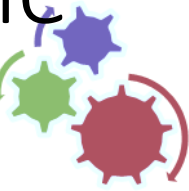


## Documentation.

RPO & ARPO.

There needs to be a written contract stating the duties and responsibilities. A copy of the required service contract between the holder and the new RPO/ARPO compiled in terms of Regulation 6(5) of the Group IV Hazardous Substances Regulations (No 247 of 26 February 1993) must be attached.

A signed letter of appointment and acceptance of the appointment needs to be on file.





## Documentation.

The employer needs to appoint a medical practitioner to perform the Radiation medicals, in writing.

Also need to appoint an optometrist to perform the yearly eye tests, in writing.





## Department of Energy (DoE).

You also need to register each source container with the DoE.

They monitor where all the depleted Uranium in the country is.

Form **DE 18** is used for the application to produce, acquire, use or transport of, and any activities related to nuclear material and equipment.

They will arrange a site visit / audit to see if you are not lying.

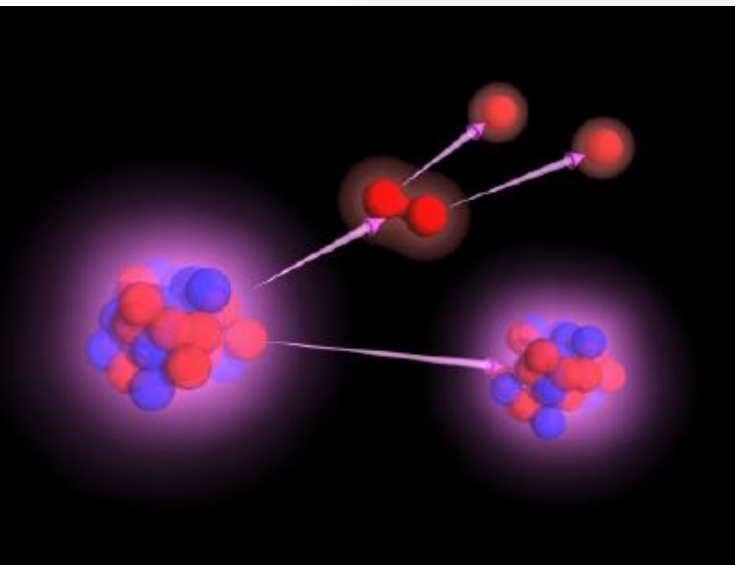




# DoE & DoH.

What about old & unused containers?

These containers still need to appear on the authority of both institutions (DoE & DoH) and will be audited regularly.





## Audit.

DoH should send a representative to come audit your facility and equipment.

They will ask you to submit part numbers and serial numbers of the equipment you possess.

They also ask you to take pictures of the storage area, the security and the warning notices.



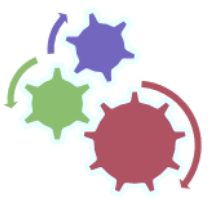






The building.



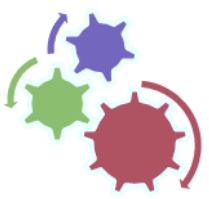


## Building.

No radioactive nuclides or radiography apparatus containing such material may be stored on any premises zoned for domestic purposes.

Warning signs, must be displayed at the entrance to storage facilities, and at any other appropriate places, so as to clearly indicate the presence of radioactive material.





## Building.

Dose rates outside radionuclide storage facilities must not exceed  $2.5 \mu\text{Sv/h}$  ( $0.25 \text{ mR/h}$ ).

A notice containing the names and telephone numbers of persons who can be contacted in the event of an emergency, must be displayed at the storage facilities.





## Building.

Radionuclide storage facilities (bomb pit) must be lockable and no unauthorized entry shall take place. No radioactive nuclides may be stored with, or in close proximity to any corrosive, combustible or explosive materials.

Outside storage facilities (storage pit) must be weatherproof. The storage pit should have a raised floor where there is the possibility that water may enter the pit.





Technicians Radiographers.







# Technicians Radiographers.

For goodness sake, when you employ radiographers you need to check that the candidate has the following documentation in place **before** employment:







# Technicians Radiographers.

Qualified to RT Level I or Level II.

Attended training and passed the Radiation Safety exam.

Registered with DoH as a radiographer, either as an X-radiographer form **RC008-1** or Gamma radiography form **RN 778**.

Able to prove (NDT Logbook) more than 480 hours of practical radiography experience in the field, after completion of the course.





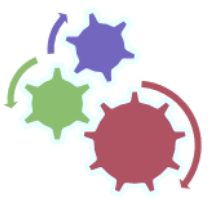
## Technicians Radiographers.

Although, as an employer you would prefer that the technicians are registered already. Remember there used to be no cost to register as a radiation worker.

These days SAINT PB is in charge of radiographer registration and it will cost you R 500-00 per year, every year.

Know what the abbreviation ALARA stands for....





## Technicians Radiographers.

SABS bin number for the Thermo luminescent device (TLD).

Life time radiation dose record, obtainable from SABS.

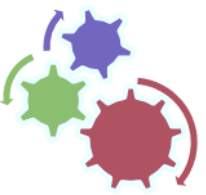
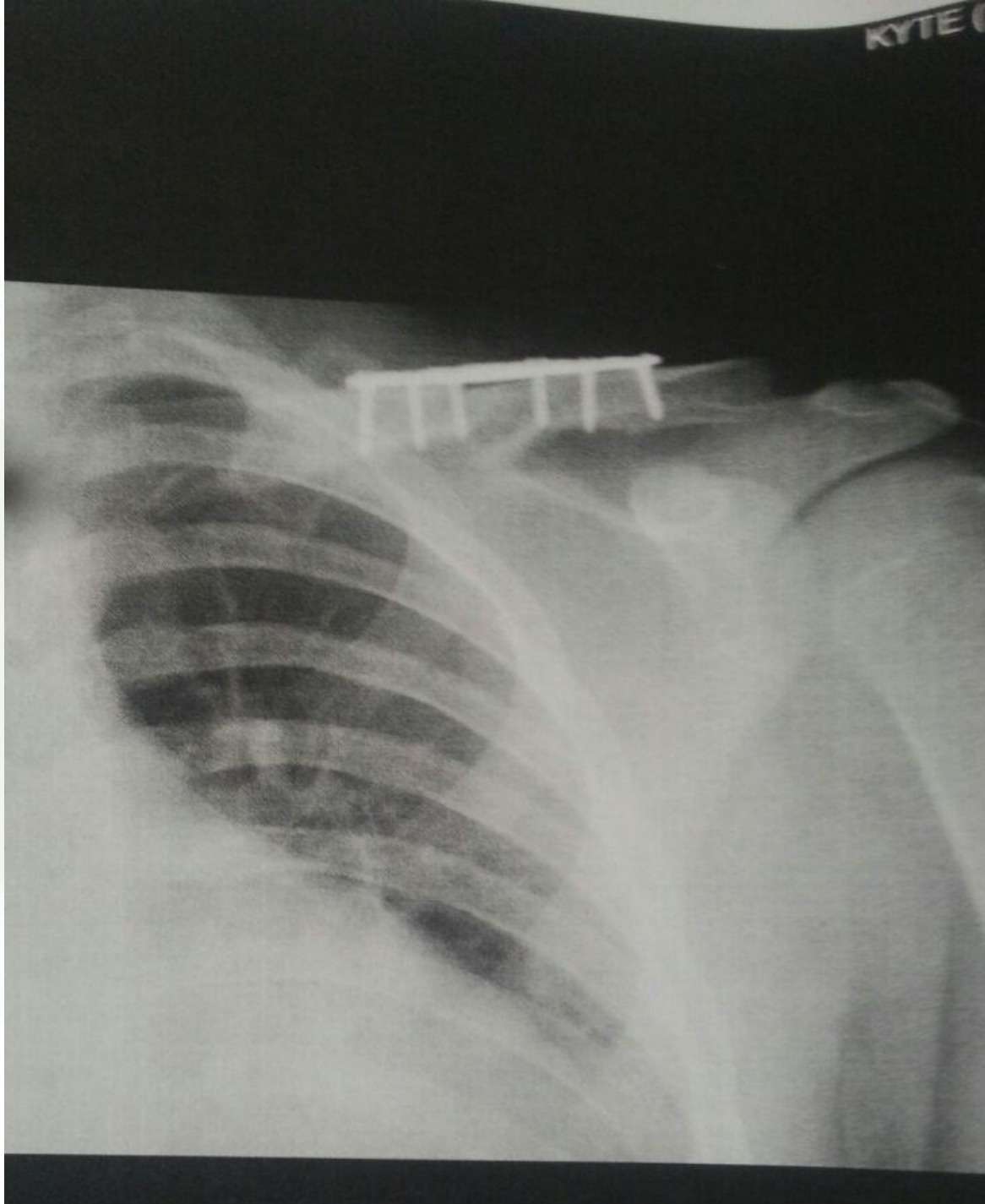
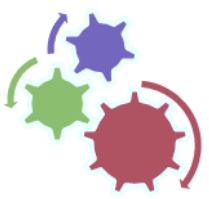
Exit medical from the previous employer.

Book a new Radiation medical so long.

Eye test, done within the last 6 months.

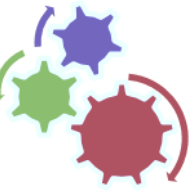
Certifications issued by previous employers, those will expire the moment technician resign.







# Checklists.





## Checklists. Daily.

A log of gamma radiography equipment must be kept on form **RN 780**. Sources and equipment needs to be checked for serviceability then signed in & out.

Daily dose records from the EPD's (Electronic Personal Dosimeters) need to be recorded.

These readings should match the print-outs you get from SABS for the TLD's (Thermo Luminescent Device)





# Checklists. Weekly.

## Storage facility check:

Number of containers.

Facility is still weather proof.

Security.

Warning signs.

Locks





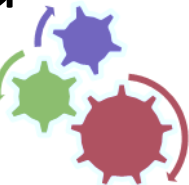
# Checklists. Monthly.

TLD readings. Get, file and keep them for audit purposes.

Arrange for the old TLD's to be collected from the technicians and assistants.

Get someone to collect the new badges from SABS because the postal service just cannot be trusted.

Check the source activity and ask DoH to forward you the form to be used to reload the container.







# Checklists. 3 Monthly.

Radiation safety observations for each technician and assistant.

Quarterly report to DoE telling them where each source container is and where you expect it to go.



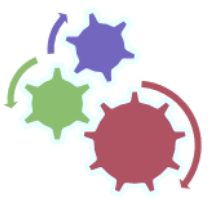


## Checklists. 6 Monthly.

The Survey meter (radiation monitor) needs to be re-calibrated every 7 months, but this takes up to 4 weeks if you do it through the usual channels.

Ask DoH to forward you the form to be used to reload the container, by now the source will be down to 2 Curies.





# Checklists. Yearly.

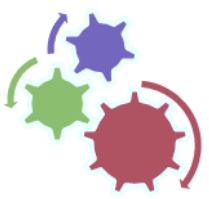
Stock register on form RN784 needs to be requested from DoH, completed and returned.

Yearly radiation safety refresher training and assessments (exams).

Internal Radiation Safety audit performed by your RT Level III or the RPO.

Yearly container leak tests, or during a reload.





# Checklists. Yearly.

No more yearly Radiation medicals required.

Review of the Internal Rules Procedure.

Review of the Emergency procedure.

Eye tests for your technicians.

Site specific medicals.

Audit from the Department of Energy.





# Checklists. 2 Yearly.

The EPD's need to be calibrated every 26 months.

Dose records needs to be printed and filed with the TLD readings from SABS.





## Checklists. Additional.

If a radioactive source is lost or missing, in which case form **RN900** must be submitted to the Directorate.

Vehicles used for transporting radioactive sources need to have a tracking device fitted. Evidence of this need to be available for audit purposes.

All records and evidence of training & assessments need to be stored for 5 years.





X-ray of a meat grinder injury to the arm and hand...





## Conclusion.

Who is responsible for training the RPO?

As you can see there is a lot of paperwork to be done and a huge responsibility rests on the RPO.

So, Who trains the RPO?







Who is responsible for training the RPO?

At the moment there is only an exam, and if you fail, you can go back again tomorrow and write the same paper until you pass.

Saint PB is trying to take over this responsibility where they will implement a relevant training session and exams.



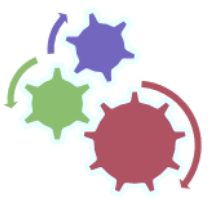


Who is responsible for training the RPO?

Your RT Level III.

If your RT Level III is unable to train and guide the RPO.  
**You need another Level III.**





## Conclusion.

Ultimately the Authority holder (employer) is responsible for compliance with the regulations?

So, Who trains the Authority holder?





Who is responsible for training the Authority holder?

Your RT Level III.

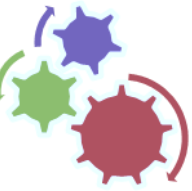
If your RT Level III is unable to train and guide you.

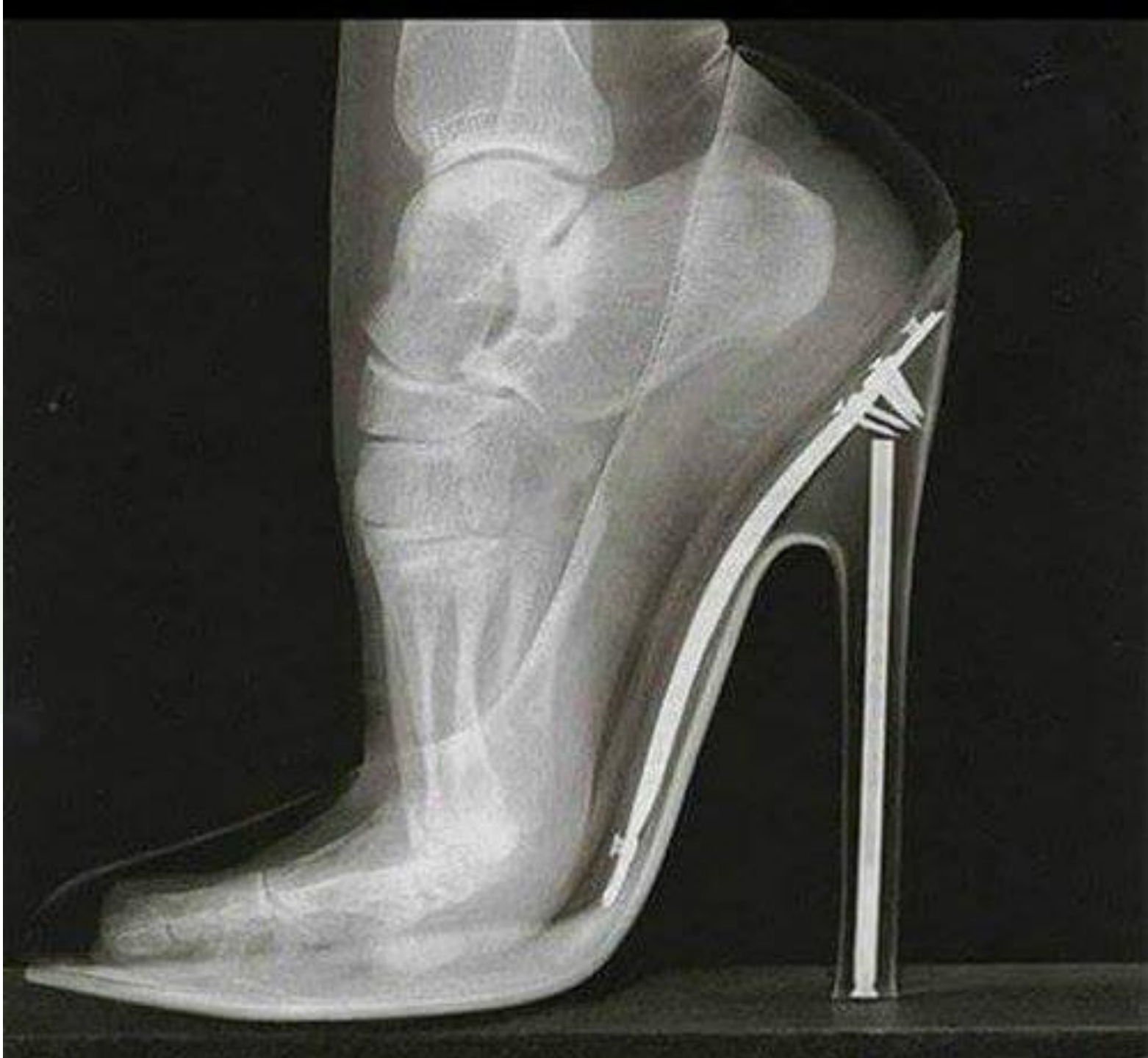
**You need another Level III.**





Any questions?







Thank you.

Compiled by:

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RPO.

