

HAZCOM

A JOINT COMMITTEE FOR THE DETECTION, SAFE REMOVAL AND DISPOSAL OF RADIOACTIVE, EXPLOSIVE AND OTHER HAZARDOUS MATERIAL IN THE METALLIC RAW MATERIAL RECYCLING INDUSTRY

Overview of Committee Functions: HAZCOM

MRA / CPI Infrastructure Workshop
28 February 2024

Presented by Douw Gangel (HAZCOM Chair)

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HISTORY



- The need for a combined effort to reduce and eliminate hazardous material from the scrap stream delivered to consumers was identified in the late 1990's.
- First official meeting of a joint work group on hazardous scrap held on 13 May 1999. In attendance were members from the South African Iron and Steel Institute (SAISI), the Metals Recyclers Association (MRA), the Non-ferrous Metals Industry Association (NFMIA) and the Institute of Foundrymen (SAIF).
- During this meeting, it was suggested that Government Departments should also be involved in the operations of the working group. At the time, these would be the Department of Health, and the Council for Nuclear Safety (CNS). Representatives from the DoH attended meetings on an ad-hoc basis, and permanently from May 2009.
- At the second meeting on 8 July 1999, the establishment of an incident register was proposed.

OBJECTIVES



- To deliberate the detection, safe removal and disposal of radioactive, explosive and other hazardous material from the metallic raw material for recycling stream in South Africa.
- To co-operate with any other organisation(s) or person(s) to promote the efficiency of identifying and disposal of hazardous material.
- To promote and disseminate to members of participating associations and the authorities any information or recommendations of value and use them in terms of hazardous metallic raw material for recycling.
- To invite organisation in the local metallic raw material for recycling industry and government representatives to subscribe to the Committee's objectives.
- HAZCOM is committed to compliance with the Competition Act (Act 89 of 1998).

PARTICIPATION



- Participation is open to all associations representing the interests of their members in the metallic raw material for recycling stream and who are concerned by the occurrence of hazardous material in the metallic recycling stream in South Africa.
- The following associations and entities are represented at meetings:
 - Metals Recyclers Association (MRA)
 - Non-ferrous Metals Industry Association (NFMIA)
 - Recycling Association of South Africa (RASA)
 - South African Institute of Foundrymen (SAIF)
 - South African Iron and Steel Institute (SAISI)
 - South African Health Products Regulatory Authority (SAHPRA)
 - South African Nuclear Energy Corporation (NECSA)
 - National Nuclear Regulator (NNR)
 - South African Police Service (SAPS) Explosives Section

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CATEGORY	EXAMPLES	FUNCTION	MANDATING LEGISLATION (NOT EXHAUSTIVE)
Regulators and S.O.E.	National Nuclear Regulator	NORM Material and Nuclear Fuels: Protecting persons, property and the environment against potential harmful effects of ionising radiation.	National Nuclear Regulator Act (Act 47 of 1999) Codes of Practice
	SAHPRA Radiation Control	Regulates all activities involving electronic generators of ionising radiation as well as radioactive sources used outside the nuclear fuel cycle.	Hazardous Substances Act (Act 15 of 1973)
	NECSA	Processing of source material; Operation of radioactive waste disposal facility.	Nuclear Energy Act (Act 46/1999)
	SAPS Explosives Section	Public Safety; Investigation of criminal cases.	South African Police Service Act (Act 68 of 1995) Explosives Act (Act 15/2003)

PARTICIPATION

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CATEGORY	EXAMPLES	FUNCTION
Industry / Private Sector	Metal Recyclers	Implementation of inspection and detection procedures and equipment. Training and awareness. Reporting of incidents to secretariat and central register.
	Consumers	Implementation of inspection and detection procedures and equipment. Training and awareness. Reporting of incidents to secretariat and central register.
	Detection Equipment OEMs	Occasional attendance: Updates on developments in the field of radiation monitoring and detection.
	Industry Associations	Secretariat volunteered by SAISI. Coordination of meetings and incident register; Central link for dissemination of information (particularly lost/stolen radioactive sources)

MATERIALS

- Radioactive Material
- Explosives/Munitions
- Closed Containers

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MATERIALS

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Lightning preventor (Ra-226)
18 April 2011



Damaged soil gauge rod (Cs-137)
14 May 2011



Density gauge (Cs-137)
20 February 2013



Aircraft engine (Thorium)
2 May 2013



Density gauge (Cs-137)
30 June 2010



Damaged soil density gauge rod (Cs-137)
4 October 2010



Damaged soil gauge rod
(Cs-137) 14 October 2010



Damaged soil density gauge (Cs-137)
3 November 2010



Damaged radiography camera with
'pigtail' (Iridium-192) 1 December 2003



Damaged soil density gauge
(Cs-137) 30 March 2004



Lead parcel containing source
(Cs-137) 1 November 2004



Lead source pin for density gauge
(Cs-137) 20 July 2009

MATERIALS

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SEALED RADIOACTIVE SOURCES

Avoid exposure to unshielded sources at all cost

Follow radiation detection measures.

- Man made sources are extremely dangerous.
- Man made sources are extremely difficult to detect
- Man made sources cause severe contamination when accidentally processed.
- Sources are widely in use in various applications and many are missing.

HOW DO SEALED RADIOACTIVE SOURCES GET INTO THE RECYCLING STREAM?

- Theft
- Loss
- Negligence
- Intentional disposal
- Accidental disposal

THOROUGHLY SCAN ALL SCRAP WITH DETECTION EQUIPMENT AS RADIOACTIVE CONTAMINATED MATERIAL PRESENTS ITSELF IN A VAST ARRAY OF PRODUCTS.



MATERIALS

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CLOSED CONTAINERS AND OTHER SIMILAR OBJECTS

- In the BOF steelmaking process, scrap is charged into a converter and thereafter liquid iron is charged into this converter, covering the scrap. The content of the cylinder then expands rapidly, causing explosion and possible injury and damage.
- In the electric arc furnace no sealed containers should be charged due to the possibility of explosions. There is added risk if the closed container is filled with a volatile gas or liquid.

Cylinders with small openings or punctures

- When the opening or puncture in the wall of the vessel is not large enough to allow rapid release of the content of the vessel an explosion will occur.
- Added risk that such a cylinder or container can now contain moisture due to the exposure to weather conditions.



MUNITIONS



Contact authorities, e.g Bomb Squad / local SAPS, on the removal of any munitions.

Visually scan scrap for munitions, in particular loads imported from neighboring countries known to have insufficient control over munitions entering the scrap stream.

MEETING STRUCTURE

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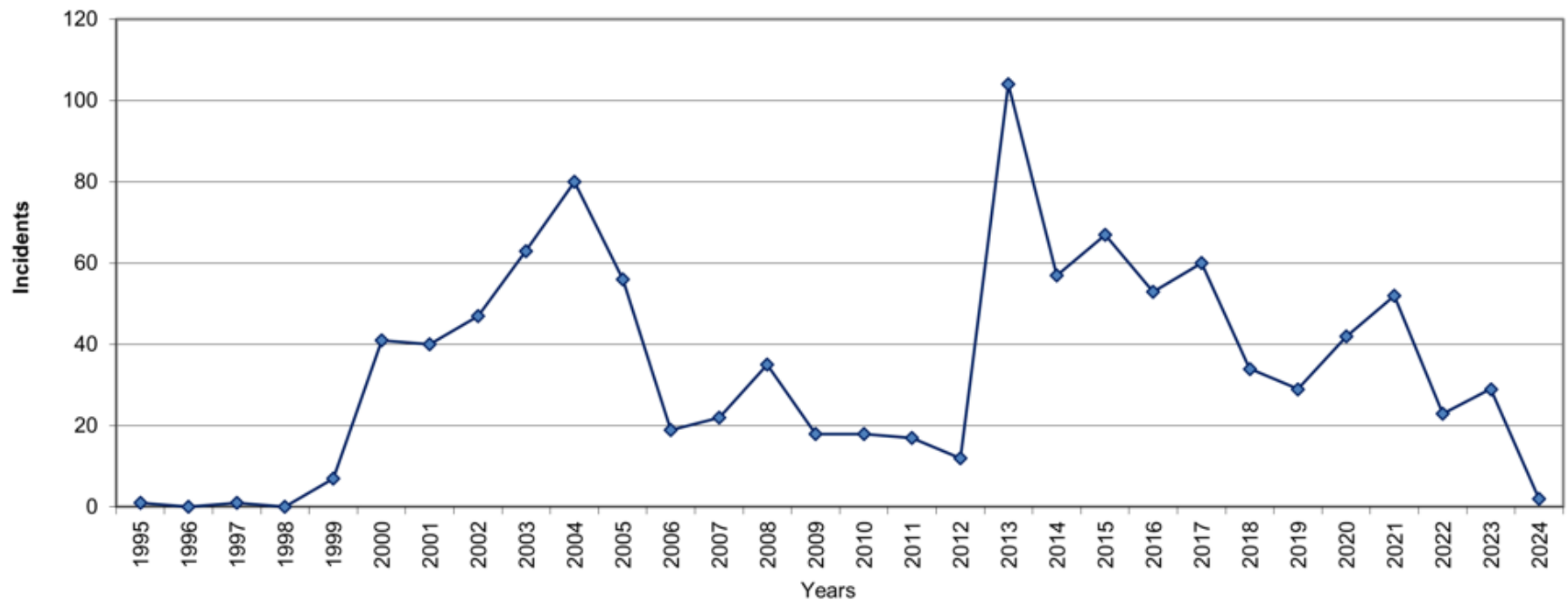
- **Strict adherence to Guidelines on Competition.**
- Chair is elected from members of participating associations and serves for a one year term. In the absence of the elected chair at any particular meeting, any member of a participating association can fulfil the role by mutual agreement.
- Secretariat function volunteered by SAISI.
- Typical agenda items:
 - National protocol and levels of responsibilities within regulatory authorities
 - Updates to first response procedure and emergency contact details
 - Register of incidents
 - Training initiatives

REPORTING

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Radioactive material - Including sources
Incidents reported to central hazardous incidents register*



* Reporting to central register at HAZCOM secretariat by suppliers and consumers of scrap metal.

REPORTING



- Most reported incidents are due to NORM material present in recycled metallic material.
- Peaks in 2004 and 2013 not fully explained but impacted by the following:
 - Annual processing volumes
 - Imports from neighbouring countries
 - Residual sediment in scrapped pipes and heat exchangers – mining, minerals processing and power generation uses where processed material naturally contain isotopes in the Thorium and Uranium decay series.
- NORM containing material redirected to sites registered with the NNR.
- Sources collected for safe disposal by NECSA.
- Sources lost due to theft:
 - 6 Incidents of theft of soil gauges reported in 2023/2024, of which one was recovered. These are often associated with the theft or hijacking of vehicles transporting the instruments.
 - This line of reporting would also cover the loss of radiation sources where these are part of fixed equipment (eg belt scales) subject to theft.

SUCCESSSES and CHALLENGES



- Industry-wide awareness (mostly by the use of posters assisting with visual identification of hazardous materials in metallic scrap).
 - Centralised register of incidents, assisting with the identification of trends.
 - Communication network acting as early-warning system to the recycling industry in events where hazardous materials are reported missing or stolen.
 - Participated in IAEA Conference hosted by DoH Radiation Control (now SAHPRA) in 2015 – wide national representation and sharing of international best practice.
 - Continuity and institutional learning.
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- Need for a standardised national protocol on handling of orphaned radioactive sources (including single point of emergency contact).

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THANK YOU