

# REMEDIATION OF CONTAMINATED LAND IN SOUTH AFRICA

Ms. Kwamnandi Mzana  
Directorate: Land Remediation



Chemicals and Waste Management



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# Presentation Outline

- Functions of the directorate: LRM
- Legislative background
- Historical Practices
- Current management of a contaminated land in SA: Part 8 of the Waste Act
- Approaches for identification and notification of investigation areas
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- Consideration of Site Assessment Report
- National Contaminated Land Register
- Process flow of Part 8
- Conclusion



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# Functions of the Directorate: LRM

- Provide an oversight in the implementation of Part 8 of Waste Act and Norms and Standards for Remediation of Contaminated Land and Soil Quality
- To Ensure that systems are in place that will make sure that adequate mitigation measures are applied where there is a site contamination.
- To support role players in management of contaminated land and manage projects addressing the remediation of contaminated land.
- To maintain the National Contaminated Land Register (NCLR).



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# Legislative Background

- **RSA Constitution Bill of Rights** states that ‘Everyone has a right to an environment that is not harmful to their health and well being’
- **Environment Conservation Act, 1989:** the first environmental legislation in the country that provided measure to control activities that may result in pollution.
- **National Environmental Management Act (NEMA) (1998):** framework legislation for environmental management and provide all environmental principles that inform all environmental legislation in the country.



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# Historical Practices

- **National Water Act (NWA) (1998):** DWS set requirements in Section 19(1) and (2) to ensure that any person who undertakes activities on land that are likely to cause pollution of water resources must take all reasonable measures to prevent such pollution from occurring, continuing or recurring.
- **National Environmental Management: Waste Act (2008)** came into effect on March 2009 and remediation activities were listed in the Waste Management list. It was subjected to Basic Assessment processes and Waste Management Licence was required



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# Current management of a contaminated land in SA: Part 8 of the Waste Act

- **Part 8 of NEM:WA** came into effect on 2 May 2014 and it applies retrospectively.
  - ✓ Provide a detailed approach for the management of contaminated land in the country.
  - ✓ Provide a **clear set of approaches in identification of investigation areas.**
  - ✓ It outlines the **processes that must be followed in management of contaminated land.**
  - ✓ It is based on Source-Pathway-Receptor Relationship
  - ✓ Governed by Polluter-Pay and Duty of Care and Sustainability Principles.



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# Current management of a contaminated land in SA: Part 8 of the Waste Act cont...

- It is aligned to the **Norms and Standards for the Remediation of Contaminated Land and Soil Quality** that:
  - ✓ Provide for a uniform national approach relating to the remediation of contaminated sites;
  - ✓ Limit uncertainties about the most appropriate criteria and method to apply in the assessment of contaminated land; and
  - ✓ Provide minimum standards for assessing necessary environmental protection measures for remediation activities.



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# Norms and Standards for Remediation of Contaminated Land and Soil Quality

- Table 1: **Soil Screening Values for Metals and Organics**
- Table 2: **Soil Screening Values for Anions**
- Where a contaminant is not listed in Table 1 or Table 2, international guidelines are being used for screening and development of remediation objectives.
- The standards do not apply in circumstances where natural background concentration exceeds the values provided in the standards.



# Table 1: Soil Screening Values for Metals and Organics

Parameter	Units	SSV1 All Land-Uses Protective of the Water Resource	SSV2 Informal Residential	SSV2 Standard Residential	SSV2 Commercial/ Industrial
<i>Metals and metalloids</i>					
Arsenic	mg/kg	5,8	23	48	150
Cadmium	mg/kg	7,5	15	32	260
Chromium (III)	mg/kg	46 000	46 000	96 000	790 000
Chromium (VI)	mg/kg	6,5	6,5	13	40
Cobalt	mg/kg	300	300	630	5 000
Copper	mg/kg	16	1 100	2 300	19 000
Lead	mg/kg	20	110	230	1 900
Manganese	mg/kg	740	740	1 500	12 000
Mercury	mg/kg	0,93	0,93	1,0	6,5
Nickel	mg/kg	91	620	1 200	10 000
Vanadium	mg/kg	150	150	320	2 600
Zinc	mg/kg	240	9 200	19 000	150 000
<b>Alkanes</b>					
C7-C9	mg/kg	2 300	2 300	2 400	23 000
C10-C14	mg/kg	440	440	500	4 400
C15-C36	mg/kg	45 000	45 000	91 000	740 000

# Table 1: Soil Screening Values for Metals and Organics cont...

Parameter	Units	SSV1 All Land-Uses Protective of the Water Resource	SSV2 Informal Residential	SSV2 Standard Residential	SSV2 Commercial/ Industrial
Benzo(a)pyrene	mg/kg	0,34	0,34	0,71	1,7
MTBE	mg/kg	0,0036	360	370	5 800
<b>Organics</b>					
Carbon Tetrachloride	mg/kg	0,25	0,27	0,26	4
Chlorobenzene	mg/kg	620	620	1 200	10 000
Chloroform	mg/kg	0,11	0,11	0,11	1,7
2 Chlorophenol	mg/kg	140	150	320	2 600
1,2 Dichlorobenzene	mg/kg	89	2 700	5 800	47 000
1,4-Dichlorobenzene	mg/kg	26	1 100	1 200	19 000
1,2-Dichloroethane	mg/kg	0,23	0,23	0,24	3,7
1,1 Dichloroethene	mg/kg	10	10	10	150
1,2,3-Trimethylbenzene	mg/kg	0,28	53	55	860
1,2 Dichloroethene	mg/kg	0,4	620	1,200	10,000
Trichlorobenzenes (total)	mg/kg	0,069	310	650	5 300
Nitrobenzene	mg/kg	2,8	2,8	2,9	45
1,1,2,2 Tetrachloroethane	mg/kg	0,32	0,32	0,34	5
2,4,6-Trichlorophenol	mg/kg	4	210	320	1 800
Vinyl Chloride	mg/kg	0,0037	0,10	0,11	1,5
PCBs	mg/kg	0,61	1,7	3,6	11
Cyanide	mg/kg	14	620	1 200	10 000

## Table 2: Soil Screening Values for Anions

Anions	Soil Screening Level (mg/kg)
Chlorides	12 000
Fluorides	30
Nitrates-nitrite	120
Sulphates	4 000

# Approaches for identification and notification of investigation areas

- High risk activities (Consultative processes in terms of S72 and 73).
- An owner of the land contaminating notify department.
- The department may issue written notice to person who might contaminating.
- **Note: DEFF and Provincial Department of Environmental Affairs are responsible for implementation of Part 8 of Waste Act.**



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# Consequence of identification and notification of investigation areas

The **identification and notification** of investigation area result in **site assessment being conducted** and where the findings of the site assessment report are that the **investigation area is contaminated**, the site assessment report must at least contain information on whether:

- ✓ the contamination has already impacted on health or the environment;
- ✓ the substances present in or on the land are toxic, persistent or bio-accumulative or are present in large quantities or high concentrations or occur in combinations;
- ✓ there are exposure pathways available to the substances;
- ✓ the acceptable exposure for human and environmental receptors in that environment have been exceeded;
- ✓ any applicable standards have been exceeded; and
- ✓ the area should be remediated or any other measures should be taken to manage or neutralise the risk.



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# Consideration of Site Assessment Reports

On receipt of a Site Assessment Report the department may, after consultation with the Water and Sanitation Department and any other organ of state concerned, decide that:

- I. the investigation area is contaminated, presents a risk to health or the environment, and must be remediated urgently;
- II. the investigation area is contaminated, presents a risk to health or the environment, and must be remediated within a specified period;
- III. the investigation area is contaminated and does not present an immediate risk, but that measures are required to address the monitoring and management of that risk; or
- IV. the investigation area is not contaminated.



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# Transfer of remediation sites

**No person may transfer contaminated land without informing the person to whom that land is to be transferred that the land is contaminated and; in the case of a **remediation site**, without **notifying the Department** and complying with any conditions that are specified by the Department.**



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# National Contaminated Land Register

- The **National Department must keep a national contaminated land register** of remediation sites that includes information on:
  - I. the owners and any users of the sites
  - II. the location of the sites;
  - III. the nature and origin of the contamination;
  - IV. whether the site:
    - ✓ is contaminated, presents a risk to health or the environment, and must be remediated urgently;
    - ✓ is contaminated, presents a risk to health or the environment, and must be remediated within a specified period;
    - ✓ is contaminated and does not present an immediate risk, but measures are required to address the monitoring and management of that risk; or
    - ✓ is not contaminated; and
    - ✓ the status of remediation activities.

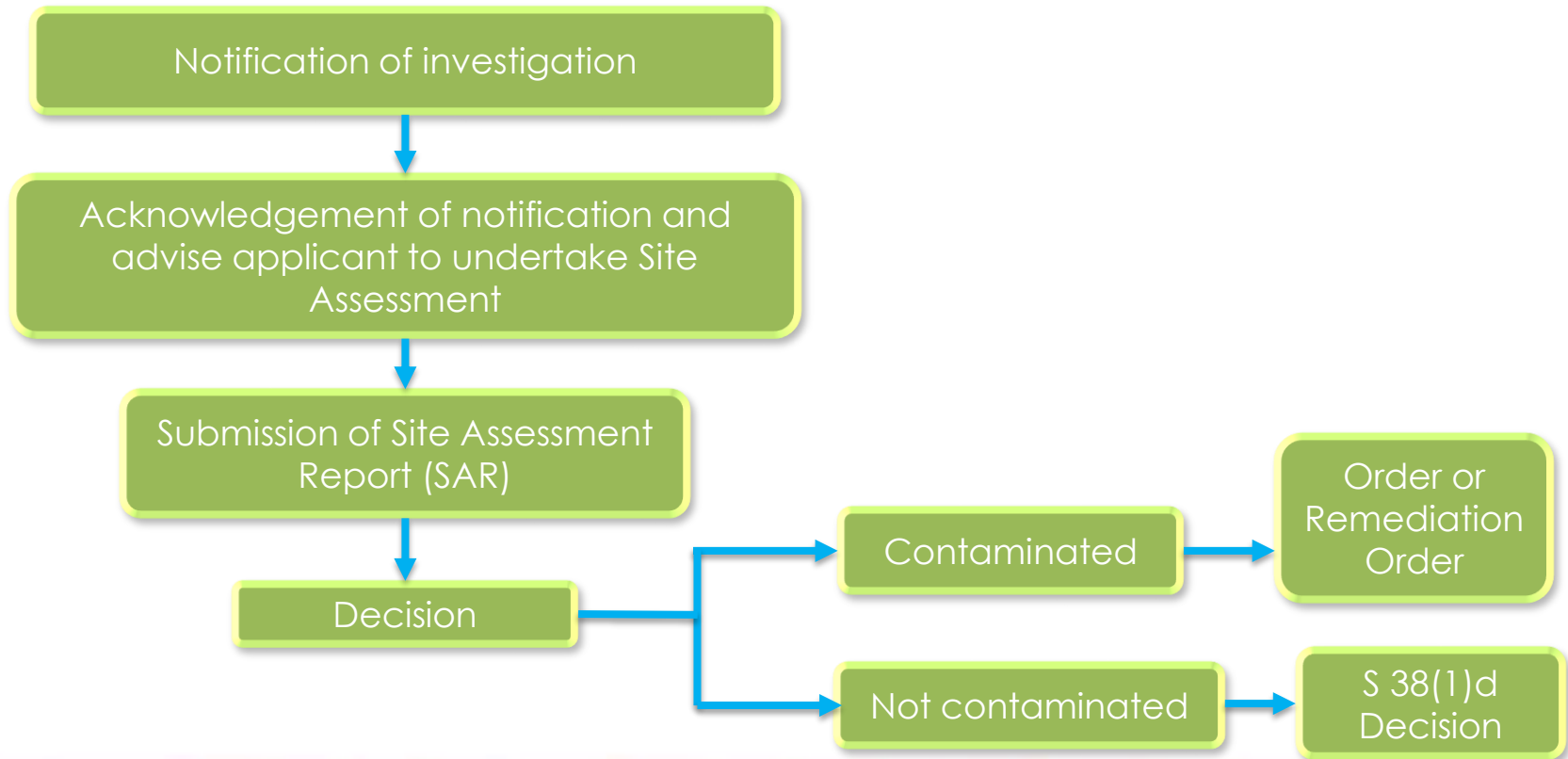


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# Process Flow of Part 8



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# Conclusion

- ✓ There is improved coordination and cooperation among the role players, regarding land remediation management.
- ✓ 441 Sites issued with Urgent Remediation Orders, Remediation Orders, and Orders.
- ✓ It is extremely encouraging to see that industries are leading in terms of notifying the department of investigation areas, compilation of Site Assessment Reports and actual remediation of contaminated sites.



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**Ms. Kwamnandi Mzana**  
**Intern: Land Remediation**

**Tel: 012 399 8758**

**Email: [KMzana@environment.gov.za](mailto:KMzana@environment.gov.za)**



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