



## **environmental affairs**

Department:  
Environmental Affairs  
**REPUBLIC OF SOUTH AFRICA**

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[www.environment.gov.za](http://www.environment.gov.za)

**REMEDIATION ORDER ISSUED TO** :DOW AGROSCIENCES SOUTHERN AFRICA  
(PROPRIETARY) LIMITED

**ADDRESS** :2<sup>ND</sup> FLOOR, FLUSHING MEADOWS BUILDING,  
DIMENSION DATA CAMPUS, CNR SIBANE STREET  
AND MAIN ROAD, BRYANSTON, 2021

**CONTACT PERSON** : DANIE GOUS

**CONTACT DETAILS** : TEL: (031) 716 5916 EMAIL: [Gous@dow.com](mailto:Gous@dow.com)

**REMEDIATION ORDER ISSUED IN TERMS OF SECTION 38(2) OF THE NATIONAL ENVIRONMENTAL MANAGEMENT: WASTE ACT, 2008 (ACT NO. 59 OF 2008)**

In terms of Section 79(1) of National Environmental Management: Waste Act, 2008, and by virtue of the powers delegated by the Minister, the Deputy Director-General: Chemicals and Waste Management hereby issues Dow Agrosiences Southern Africa (Proprietary) Limited with a Remediation Order for the remediation of contaminated land at Dow Agrosiences Canelands site at Farm Cotton Lands No. 1575 in KwaZulu-Natal Province.

### **1. BRIEF DESCRIPTION OF THE REMEDIATION ACTIVITY AND LOCATION**

The remediation activity entails:

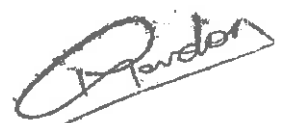
Remediation of metals and organic compounds contaminated soil and groundwater at Dow Agrosiences Canelands site at Farm Cotton Lands No. 1575 in KwaZulu-Natal Province, with the following coordinates:

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<b>Number of Co-ordinates</b>	<b>Latitude</b>	<b>Longitude</b>
1.	29°37'23.36"S	31°3'35.71"E
2.	29°37'19.55"S	31°3'16.99"E
3.	29°37'27.90"S	31°3'30.81"E
4.	29°37'30.61"S	31°3'10.94"E
5.	29°37'28.35"S	31°3'34.15"E

**2. REMEDIATION MEASURES**

- 2.1 Remediation processes must be undertaken in full compliance with the Remediation Order and Dow Agrosiences Canelands Site Assessment Report compiled by Jones & Wagener Engineering & Environmental Consultant dated May 2017.
- 2.2 Should the Holder of this Remediation Order decide to change or deviate from this Remediation Order and Site Assessment Report, a request for approval must be submitted to the department prior to implementation.
- 2.3 Persulfate Oxidation and Thermal Hydrolysis must be used to address soil and groundwater contaminated with Mon-aromatic hydrocarbons, Chloromethanes, chlorobenzenes, chlorophenols, tebuthiuron and petroleum hydrocarbons at Hyperchem Plant.
- 2.4 Arsenic contamination will be addressed through dewatering of groundwater at the new Groundwater treatment plant.
- 2.5 The contaminated soil at the Old Settlement Pond must be excavated and disposed at the registered landfill authorised to such material. The Holder of the Remediation Order must backfill the pond with clean uncontaminated material.
- 2.6 Contamination at the main building will also be remediated through dewatering of groundwater at the new Groundwater treatment plant.



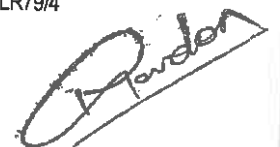
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- 2.7 Pump and Treat technology must be used to remediate the elevated concentrations of Poly-Aromatics Hydrocarbons which represent moderate to high hazard at Govpark and Effluent Plant.
- 2.8 The off-site boreholes and the Umdloti River must be sampled on a continuous basis to monitor the impacts and risk to the environment. Copies of safe disposal certificates must be forwarded to the department as an Annexure to the report required in terms of condition 7.1.
- 2.9 The Remediation of contaminants must be considered successful upon reducing the contaminant level to acceptable to human health and environment.
- 2.10 A copy of this Remediation Order and Site Assessment Report must always be available on site for reference during the monitoring and management of the site.
- 2.11 In the event of predictions and measures included in the Site Assessment Report failing to work, the Holder of the Remediation Order may be required to re-evaluate and enhance the Site Assessment Report.
- 2.12 Soil excavated during engineering works or remedial actions must be segregated into at least two separate stockpiles, namely uncontaminated and contaminated soil.
- 2.13 Contaminated soil and any waste materials generated during the remediation of the site must be stored in an area that is capable of preventing migration of any contaminants.
- 2.14 Contaminated soil must not be stockpiled in areas where surface water may accumulate, in drainage channels or areas susceptible to erosion. All contaminated soil should be kept in a manner that will prevent the possibility of loss of contaminated soil in the event of precipitation.
- 2.15 The Holder of the Remediation Order must ensure that all contaminated material transported off-site for disposal is covered to prevent secondary pollution.



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- 2.16 The Holder of the Remediation Order must ensure that treatment of contaminated soil does not impact on any water resource or on any other person's water use, property or land and must not be detrimental to the health and safety of the public in the vicinity of the site.
- 2.17 The Holder of the Remediation Order must ensure that all waste material is disposed of at a licensed waste disposal facility. Copies of safe disposal certificates must be forwarded to the department as an Annexure to the report required in terms of condition 7.1.
- 2.18 The Holder of the Remediation Order must ensure that all liquid wastes whose discharge to water or land could exacerbate soil and water pollution, is provided with secondary containment. Treated contaminated water may only be diverted to the sewer upon approval by the relevant authority.
- 2.19 The Holder of the Remediation Order must keep record of the amount of liquid waste dispatched for disposal to a licensed waste disposal facility.
- 2.20 The Holder of the Remediation Order must ensure that all personnel who work with contaminated material are trained to deal with these potential hazardous situations so as to minimize the risks involved. Records of training and verification of competence must be kept by the Holder of the Remediation Order.
- 2.21 The Holder of the Remediation Order must ensure no ponding of water on areas demarcated for remediation.
- 2.22 The Director: Land Remediation of this department must be notified in writing within fourteen (14) days prior to the commencement of remediation activities at the site.
- 2.23 This Remediation Order shall not be construed as exempting the Holder from compliance with the provisions of other National and Provincial Legislation and any relevant Ordinance, Regulations, By-laws and relevant National Norms and Standards.



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- 2.24 Any complaint from the public must be attended to by the Holder of the Remediation Order as soon as practicably possible to the satisfaction of the complainant and/or the Department.
- 2.25 The Holder of the Remediation Order must keep an incident and complaints register on site. The register must contain contact details of the complainant(s) as well as details pertaining to the complaint.
- 2.26 A copy of this Remediation Order may be published by the department, in its discretion, on any website or other media.
- 2.27 The officials from this department and/or department of Water and Sanitation reserve the right to enter the site for compliance monitoring purposes, take water samples at any time, analyse the samples, or have them taken and analysed.
- 2.28 Any records or documentation must be made available upon request by any departmental official doing inspections and any other relevant authority inspecting the site.

**3. SOIL QUALITY MONITORING**

- 3.1 Soil quality monitoring must be performed in all contaminated soil or site and the monitoring results must be compared to the quality of soil from uncontaminated site adjacent to the site to determine the success of the remediation.
- 3.2 Soil quality monitoring results must be submitted with the internal audit report which must be submitted to the Director: Land Remediation in terms of condition 7.1.

**4. WATER QUALITY MONITORING**

- 4.1 Surface water quality monitoring must be performed in all storm water drains and the monitoring results must be submitted with the internal audit report which must be submitted to



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the Director in terms of condition 7.1.

- 4.2 The Holder of the Remediation Order must provide to the Director, within Six (6) months from the date of this Remediation Order, a new monitoring programme as well as water quality results together with a remediation programme for groundwater.
- 4.3 The extensive monitoring network should be maintained which will include the measuring of water levels, and sampling of groundwater and analysing for contaminants of concerns on a biannual basis.
- 4.4 An evaluation of the effectiveness of the remediation actions including risk assessment should be conducted at the end of each calendar year. Should there be any noticeable improvement in the water quality of the lower aquifers; the remediation of the aquifer can be reassessed.
- 4.5 All solid waste generated from decommissioning activity must be handled according to the precautionary principles. This implies that waste including soil, metal and other materials must be handled as hazardous unless proven otherwise.
- 4.6 The Holder of the Remediation Order need to do a borehole census up and down gradient of the site and include some these boreholes for monitoring of the contaminant migration.
- 4.7 Subsequently the groundwater quality monitoring results must be submitted with the internal audit report which must be submitted to the Director in terms of condition 7.1.

**5. INVESTIGATIVE MONITORING**

- 5.1 If, in the opinion of the Director, soil and/or water quality variable at any monitoring point referred to in condition 3 and 4 above shows an increasing trend, the Holder of the Remediation Order must report such trend to the authority in terms of condition 7 below.




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**6. INVESTIGATIONS**

- 6.1 If, in the opinion of the Director, environmental pollution, nuisances or health risks may be occurring or are occurring on the Site, the Holder of the Remediation Order must initiate an investigation into the cause of the problem or suspected problem.
- 6.2 If, in the opinion of the Director water pollution may be occurring or is occurring, the Holder of the Remediation Order must initiate an investigation into the cause of the problem or suspected problem. Such investigation must include the monitoring of the water quality variables at those monitoring points and at such frequency as may be specified by Director.
- 6.3 Should the investigation carried out as per conditions 6.1 and 6.2 above reveal any unacceptable levels of pollution, the Holder of the Remediation Order must submit mitigation measures to the satisfaction of the Director.

**7 RECORDING AND REPORTING**

- 7.1 The monitoring results / internal audit report must be submitted to the Director annually from the date of commencement of remediation activity.
- 7.2 The Holder of the Remediation Order must, within twenty-four (24) hours notify the Director of the occurrence or detection of any incident on the Site, or incidental to the remediation of the site, which has the potential to cause, or has caused pollution of the environment, health risks, nuisance conditions or water pollution.
- 7.3 The Holder of the Remediation Order must, within fourteen (14) days, or a shorter period of time, if specified by the Director from the occurrence or detection of any incident, submit an action plan, which must include a detailed time schedule, and resource allocation signed off by senior management, to the satisfaction of the Director of measures taken to –
- a) Correct the impact resulting from the incident;



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- b) Prevent the incident from causing any further impact; and
  - c) Prevent a recurrence of a similar incident.
- 7.4 The Holder of the Remediation Order must keep an incident and complaints register. A complaint register must be kept on site, containing contact details of the complainant(s), as well as details pertaining to complaint itself.
- 7.5 Any records or documentation must be made available upon request by the Director, any departmental official doing inspections and any other relevant authority inspecting the site activities.
- 7.6 Records relating to compliance and non-compliance with the conditions of this Remediation Order must be kept in good order. Such records shall be made available to this Department within seven (7) days of receipt of a written request by this Department. Environmental compliance will further be monitored through complaints received from the public. The Department must be notified within fourteen (14) days of the following changes:
- a) Holder of the Remediation Order trading name, registered name, contact details, and/or name of responsible person;
  - b) Particulars of the Holder of the Remediation Order ultimate holding company (including details of an ultimate holding where Holder of the Remediation Order has become a subsidiary); and
  - c) Steps taken with a view to the Holder of the Remediation Order, or any one of them, going into bankruptcy, entering into arrangement with creditors, or, in the case of them being in a partnership, dissolving the partnership.
- 7.7 The external audit report referred to in condition 8.2 below must be submitted to the Director within 30 days from the date on which the external auditor finalised the audit.





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**8. AUDITING**

**8.1 INTERNAL AUDITS**

8.1.1 Internal audits must be conducted bi-annually by the Holder of the Remediation Order and on each audit occasion an official report must be compiled to report the findings of the audits and must be made available to the external auditor specified in condition 8.2.1.

**8.2 EXTERNAL AUDITS**

8.2.1 The Holder of the Remediation Order must appoint an independent external auditor to audit the Site upon completion of the remediation activities and the auditor must compile a closure report documenting the findings of the audit, which must be submitted by the Holder of the Remediation Order according to condition 7.7 above.

8.2.2 The audit report must:

- a) Specifically state whether conditions of this Remediation Order are adhered to;
- b) Include an interpretation of all available data and test results regarding the operation of the site and all its impacts on the environment;
- c) Specify target dates for the implementation of the recommendations by the Remediation Order Holder to achieve compliance;
- d) Contain recommendations regarding non-compliance or potential non-compliance and must specify target dates for the implementation of the recommendations by the Remediation Order Holder and whether corrective action taken for the previous audit non conformities was adequate; and
- e) Show monitoring results graphically and conduct trend analysis.

**8.3 DEPARTMENTAL AUDITS AND INSPECTIONS**

8.3.1 The Department reserves the right to audit and/or inspect the Site without prior notification at any



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time and at such frequency as may be determined by the Director.

8.3.2 The Holder of the Remediation Order must make any records or documentation available to the Director upon request, as well as any other information he/she may require.

**9. TRANSFER OF CONTAMINATED SITE**

9.1. The Holder of the Remediation Order must inform the person to whom the land is to be transferred about the status of the site prior to such transfer.

9.2. The Holder of the Remediation Order must notify the department in writing within thirty (30) days prior to the transfer of the site.

**10. CLOSURE OF THE MONITORING AND MANAGEMENT ACTIVITIES**

10.1. The Holder of the Remediation Order must submit a closure report to the Department within ninety (90) days of the date of completion of the monitoring and management activities for approval.

10.2. The closure report must amongst others include the following:

- a) Evidence to demonstrate that the site does not pose any significant harm to the environment and/or human health either immediately or in future;
- b) Monitoring objectives are achieved; and
- c) Any other information relevant to prove completion of the monitoring activities.



**MR. MARK GORDON**

**DEPUTY DIRECTOR-GENERAL: CHEMICALS AND WASTE MANAGEMENT**

DATE: 01/12/2017

