



environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

RISK MANAGEMENT PLAN IN TERMS OF REGULATION 10 OF WASTE EXCLUSION REGULATIONS

APPLICANT	ESKOM HOLDINGS SOC Ltd		
SOURCE(S) OF WASTE	Eskom Coal fired Power Stations		
WASTE TO BE BENEFICIATED	Gypsum		
BENEFICIAL USE/S	Manufacture of wallboard, cement, plaster of Paris, soil conditioning, a hardening retarder in portland cement.		
MSDS ATTACHED IF HAZARDOUS	YES	NO	
		x	
WASTE GENERATING FACILITY			
PHYSICAL ADDRESS	POWER STATION NAME	COALFIELDS	Location
	Arnot PS	Witbank	Rietkuil, 50km E of Middleburg
	Camden PS	Witbank	15km E of Ermelo
	Duvha PS	Witbank	15km E of Witbank
	Grootvlei PS	Witbank	Near Balfour in Mpumalanga
	Hendrina PS	Witbank	Pullenshope, 40km S Middleburg
	Kendal PS	Witbank	Near Ogies, 40km SW of Witbank
	Komati PS	Witbank	Komati, 37 km from Middleburg
	Kriel PS	Witbank	Between Kriel and Ogies
	Lethabo PS	Free State	Between Vereeniging and

			Sasolburg
	Majuba PS	Witbank	Between Volksrust and Amersfort
	Matimba PS	Waterburg	LepHalale
	Matla PS	Witbank	Between Kriel and Secunda
	Tutuka PS	Witbank	25km from Standerton road to Bethal
	Medupi PS (Partially operational)	Waterburg	LepHalale
	Kusile PS (Partially operational)	Witbank	Nkangala district, Mpumalanga
GPS CO-ORDINATES OF WASTE GENERATING FACILITY (e.g. 60° 29' 30" Latitude; 34° 20' 15" Longitude)	<p><u>The co-ordinates of all Eskom Power Stations are included in an Appendix attached to this application.</u></p> <p>THE CO-ORDINATES REPRESENT "ALL CORNERS" OF THE WASTE GENERATION FACILITY AS REQUIRED BY THE APPLICATION. SEVERAL CO-ORDINATES ARE REQUIRED TO IDENTIFY THE IRREGULAR SHAPE OF ESKOM ASH GENERATING FACILITIES. THE CO-ORDINATES REPRESENT THE BOUNDARIES OF THE POWER STATION PROPERTY WHICH WOULD INCLUDE ALL POSSIBLE ASH TAKE OFF SITES.</p>		
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RISK MANAGEMENT PLAN

Activity	Risk Description	Action(s) to minimise/ manage the risk	Responsibility (Who is responsible to do it)
Transport of Gypsum: offloading and onloading.	<p>Spillages of gypsum in large quantities during the on and / or offloading might contaminate nearby natural botanical species and agricultural crops by settling on the plant leaves, stems or flowers.</p> <p>Although gypsum has been shown to increase the pH of the soil, certain soils might be contaminated with large and continuous deposition of gypsum.</p>	<p>Gypsum must be transported in tankers or sealed bins / containers.</p> <p>PPE in the form of dust masks and eye protection must be worn. Gypsum should be packaged in bags to minimise spillages.</p> <p>The relevant tool box talks, capacity building and training of staff must be completed to raise awareness of the risks and response plans.</p>	Gypsum transporter and / or gypsum offtaker
Transport of Bottom / course gypsum	<p>Accidental spillages during loading and unloading of vehicles. Dust will be less of a factor in the handling of gypsum. Spillages during the on and / or offloading might contaminate nearby natural botanical species and agricultural crops by settling on the plant leaves, stems or flowers.</p> <p>Although gypsum has been shown to increase the pH of the soil, certain soils might be contaminated with large and continuous deposition of gypsum</p>	<p>All transport vehicles for gypsum, must have load bins and must be covered with a tightly fitted tarpaulin.</p> <p>Vehicles must be serviced regularly and have their service records available. Vehicles should be checked for areas of potential spillage.</p> <p>The relevant tool box talks, capacity building and training of staff must be completed to raise awareness of the risks and response plans.</p>	Gypsum transporter and / or gypsum offtaker
Transport of all Gypsum	Spillage of gypsum or water containing gypsum from the transport vehicles on route to the gypsum users. Gypsum spillages	A pre start inspection of all vehicles should be completed periodically	Gypsum transporter and / or gypsum

	<p>in large quantities during the on and / or offloading might contaminate nearby natural botanical species and agricultural crops by settling on the plant leaves, stems or flowers.</p> <p>Although gypsum has been shown to increase the pH of the soil, certain soils might be contaminated with large and continuous deposition of gypsum dust.</p>	<p>to ensure road worthiness.</p> <p>Vehicles must comply to SABS 1518 "Transportation of dangerous goods" and have on board the MSDS for the gypsum being transported.</p> <p>Equipment for emergency events must be available on vehicles. Wheelie bins for example with berms, brooms and spades must be on the vehicle.</p> <p>The relevant tool box talks, capacity building and training of staff must be completed to raise awareness of the risks and response plans.</p>	<p>offtaker</p>
<p>Transport of all Gypsum : Compliance of vehicle to Road traffic Act</p>	<p>Vehicles In poor condition or inadequate to transport gypsum will facilitate uncontrolled spillages of gypsum. Dust generated in large quantities during the on and / or offloading might contaminate nearby natural botanical species and agricultural crops by settling on the plant leaves, stems or flowers.</p> <p>In large quantities, gypsum dust might settle on water body surfaces and be ingested by aquatic vertebrates and invertebrates.</p> <p>Although gypsum has been shown to increase the pH of the soil, certain soils might be contaminated with large and continuous deposition of gypsum dust.</p>	<p>A pre start inspection of all vehicles should be completed periodically to ensure road worthiness.</p> <p>Vehicles must comply to SABS 1518 "Transportation of dangerous goods" and have on board the MSDS for the gypsum being transported.</p> <p>Equipment for emergency events must be available on vehicles</p> <p>Any spillages of gypsum, dirty water or gypsum material must be reported to the Generator. Such spills must be attended too and cleaned as a matter</p>	<p>Gypsum transporter and / or gypsum offtaker</p>

		<p>of urgency (within 48 hours).</p> <p>The relevant tool box talks, capacity building and training of staff must be completed to raise awareness of the risks and response plans.</p>	
Storage of Gypsum	<p>Soil contamination by gypsum stored at the user facility. Gypsum will be stored in tankers or closed bins / containers and it remains improbable that any contamination will occur.</p> <p>Gypsum spillages could contaminate water bodies and be detrimental to vertebrate and invertebrate aquatic life. In extreme cases, natural vectors could convey contaminated water to groundwater aquifers. Although gypsum has been shown to increase the pH of the soil, certain soils might be contaminated by gypsum spillages.</p>	<p>Gypsum to be stored in silos – gypsum must be stored on a concrete surface which is bunded with bricked cement to a height effective to contain all the gypsum. Gypsum may only be stored on this lined and bunded area. All gypsum to be covered during storage.</p> <p>Clean and dirty water must be kept separate to limit contamination of water.</p> <p>Any spillages of gypsum, dirty water or gypsum material must be reported to the Generator. Such spills must be attended too and cleaned as a matter of urgency (within 48 hours).</p> <p>The relevant tool box talks, capacity building and training of staff must be completed to raise awareness of the risks and response plans.</p>	Gypsum transporter and / or gypsum offtaker
Storage of Gypsum	<p>Groundwater contamination by gypsum stored at the user facility. Gypsum will be stored in tankers or closed bins / containers and it</p>	<p>Gypsum must be stored on a concrete surface which is bunded with bricked cement to a</p>	Gypsum transporter and / or gypsum

	<p>remains improbable that any contamination will occur</p> <p>Gypsum spillages could contaminate water bodies and be detrimental to vertebrate and invertebrate aquatic life. In extreme cases, natural vectors could convey contaminated water to groundwater aquifers</p>	<p>height effective to contain all the gypsum. Gypsum may only be stored on this lined and bunded area. Clean and dirty water must be kept separate to limit contamination of water.</p> <p>Any large spillages of gypsum, dirty water or gypsum material must be reported to the Generator. Such spills must be attended too and cleaned as a matter of urgency (within 48 hours).</p> <p>The relevant tool box talks, capacity building and training of staff must be completed to raise awareness of the risks and response plans.</p>	<p>offtaker</p>
<p>Storage of Gypsum</p>	<p>Surface water contamination by gypsum storage at the user facility. Gypsum will be stored in tankers or closed bins / containers and it remains improbable that any contamination will occur</p> <p>Gypsum spillages could contaminate water bodies and be detrimental to vertebrate and invertebrate aquatic life. In extreme cases, natural vectors could convey contaminated water to groundwater aquifers.</p>	<p>Gypsum must be stored in silo's or similar sealed containers.</p> <p>Any spillages of gypsum, dirty water or gypsum material must be reported to the Generator. Such spills must be attended too and cleaned as a matter of urgency (within 48 hours).</p> <p>The relevant tool box talks, capacity building and training of staff must be completed to raise awareness of the risks and response plans.</p> <p>Storage area to be inspected weekly to check integrity of the</p>	<p>Gypsum transporter and / or gypsum offtaker</p>

<p>Potential for stockpiled gypsum to generate leachate during rainfall</p>	<p>Gypsum facilities with poorly constructed stormwater drain systems could discharge dirty water to the environment.</p>	<p>structure Gypsum to be stored in a formal storage area which is bunded Ensure physical separation of the dirty and clean stormwater drains. Ensure construction of the facility directs all dirty stormwater drains to a containment area / pit or dam. Storage area to be inspected weekly to check integrity of the structure</p>	<p>Gypsum Offtaker</p>
<p>Construction and design of an gypsum handling and/or storage facility</p>	<p>Gypsum facilities which are poorly ventilated will cause possible health impacts.</p>	<p>All gypsum handling and storage facilities must be adequately ventilated and gypsum handlers issued with the appropriate PPE (particularly masks and gloves). Contaminated water to be managed from leaving the site. Any spillages of gypsum, dirty water or gypsum material must be reported to the Generator. Such spills must be attended too and cleaned as a matter of urgency (within 48 hours). The relevant tool box talks, capacity building and training of staff must be completed to raise awareness of the risks and response plans.</p>	<p>Gypsum transporter and / or gypsum offtaker</p>
<p>Construction and design of an gypsum</p>	<p>Gypsum facilities close to natural water bodies will cause possible soil or water contamination.</p>	<p>On and off loading areas are required to be appropriately bunded</p>	<p>Gypsum transporter and / or gypsum</p>

<p>handling and/or storage facility</p>		<p>and lined. All contaminated water from vehicle washing and wheel washing must be contained.</p> <p>Any spillages of gypsum, dirty water or gypsum material must be reported to the Generator. Such spills must be attended too and cleaned as a matter of urgency (within 48 hours).</p> <p>The relevant tool box talks, capacity building and training of staff must be completed to raise awareness of the risks and response plans.</p>	<p>offtaker</p>
<p>Access Control to Gypsum facilities</p>	<p>Uncontrolled access to gypsum facilities will lead to non compliance to the controls of the Risk Management Plan. Unsupervised spillage or dust blown particles if in large enough quantities, might contaminate natural and man-made surface water bodies.</p>	<p>Relevant PPE must be worn by all employees when handling gypsum. Site access must be controlled and warning signs must be visible at the access point . Access to the gypsum facility as well as on and off loading areas must be controlled via a register, ledger or similar control mechanism.</p> <p>All gypsum handling and storage facilities must have adequate signage.</p>	<p>Gypsum transporter and / or gypsum offtaker</p>
<p>Handling of Gypsum on site / Extraction of Gypsum / On and off loading of Gypsum</p>	<p>Spillage of gypsum material or slurry. Spillages during the on and / or offloading might contaminate nearby natural botanical species and agricultural crops by settling on the plant leaves, stems or flowers.</p>	<p>Gypsum must only be handled within the lined and bunded area.</p> <p>Any spillages of gypsum, dirty water or gypsum material must be reported to the Generator. Such spills</p>	<p>Gypsum transporter and / or gypsum offtaker</p>

	<p>Although gypsum has been shown to increase the pH of the soil, certain soils might be contaminated with large and continuous deposition of gypsum.</p>	<p>must be attended too and cleaned as a matter of urgency (within 48 hours).</p> <p>The relevant tool box talks, capacity building and training of staff must be completed to raise awareness of the risks and response plans.</p>	
<p>Emergency or unplanned event</p>	<p>Loss of containment with potential impacts to air, soil, ground and surface water. In an emergency or unplanned event, spillages might contaminate nearby natural botanical species and agricultural crops by settling on the plant leaves, stems or flowers.</p> <p>Although gypsum has been shown to increase the pH of the soil, certain soils might be contaminated with large and continuous deposition of gypsum.</p>	<p>Site to have an emergency response plan in place inclusive of appropriate equipment such as control and clean up diversion berms.</p> <p>Any spillages of gypsum, dirty water or gypsum material must be reported to the Generator. Such spills must be attended too and cleaned as a matter of urgency (within 48 hours).</p> <p>The relevant tool box talks, capacity building and training of staff must be completed to raise awareness of the risks and response plans.</p>	<p>Gypsum transporter and / or gypsum offtaker</p>
<p>Storm water management</p>	<p>The inadequate management of stormwater on site will allow discharge of contaminated water to the environment. Gypsum contaminated effluent or stormwater if diverted into water bodies, may be harmful if ingested by aquatic vertebrates and invertebrates.</p>	<p>All dirty areas should be separated from clean water areas, where dirty storm water is collected within a dirty water dam for reuse as dust suppressant and for evaporation.</p> <p>Any spillages of gypsum, dirty water or gypsum material must be reported to the</p>	<p>Gypsum transporter and / or gypsum offtaker</p>

		<p>Generator. Such spills must be attended too and cleaned as a matter of urgency (within 48 hours).</p> <p>The relevant tool box talks, capacity building and training of staff must be completed to raise awareness of the risks and response plans.</p>	
Leaching of gypsum elements	<p>The chemical reaction of gypsum particles with natural elements in the surrounding soil and water could lead to the leaching of harmful metals into the environment. The leaching of harmful metals from gypsum will be toxic to all vertebrate and invertebrate life in the soil substrate and water bodies. The negative effect will likely be extended to the health of the soils and the botanical biodiversity of the area.</p>	<p>Gypsum is only prone to leaching in highly acidic environments. Any spillages of gypsum, dirty water or gypsum material must be reported to the Generator. Such spills must be attended too and cleaned as a matter of urgency (within 48 hours).</p> <p>The relevant tool box talks, capacity building and training of staff must be completed to raise awareness of the risks and response plans.</p>	Gypsum transporter and / or gypsum offtaker
Contamination of soil due to overdose applications.	<p>The overuse of gypsum in a particular area could adjust the pH of the soil temporarily. Potential contamination of soil, surface water and groundwater as a result of incorrect application volumes</p>	<p>The application of gypsum to soils will be in accordance with printed specifications. The specifications must be strictly adhered too.</p> <p>All staff involved in the application of the gypsum must complete training on the product specifications.</p>	Product user
Decommissioning of site	<p>Without a decommissioning plan a non active site may lead to gypsum spillages or</p>	<p>Sites must have a plan associated for the decommissioning phase</p>	Gypsum offtaker

	<p>contamination of surrounding air, soil and water. In the scenario of an abandoned site, dust generated in large quantities might contaminate nearby natural botanical species and agricultural crops by settling on the plant leaves, stems or flowers.</p> <p>In large quantities, gypsum might settle on water body surfaces and cause harm if ingested by aquatic vertebrates and invertebrates.</p> <p>In severe cases, an abandoned site might eventually contaminate groundwater at the site.</p> <p>Although gypsum has been shown to increase the pH of the soil, certain soils might be contaminated with large and continuous deposition of gypsum</p>	<p>to ensure zero post operations impacts. Funds should be set aside for decommissioning during the life of the project.</p> <p>The relevant tool box talks, capacity building and training of staff must be completed to raise awareness of the risks and response plans.</p>	
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SOCIO-ECONOMIC RISKS:

Positive spin offs at risk should gypsum beneficiation not be possible:

<p>Job creation</p>	<p>Increase in job creation for unskilled to semiskilled workforce in vulnerable communities.</p>	<p>This is a positive spin off of gypsum beneficiation and should be maximised.</p>	<p>Eskom and Department of Environmental Affairs</p>
<p>Small business development</p>	<p>The low cost of gypsum and the relaxation of some of the Norms and Standards will promote small business development</p>	<p>This is a positive spin off of gypsum beneficiation and should be maximised.</p>	<p>Eskom and Department of Environmental Affairs</p>
<p>Community based projects</p>	<p>The low cost of gypsum and the relaxation of some of the Norms and Standards may empower vulnerable communities to participate in projects. Eskom assistance may also promote community based projects.</p>	<p>This is a positive spin off of gypsum beneficiation and should be maximised.</p>	<p>Eskom and Department of Environmental Affairs</p>

DECLARATION

I, **W G S FUNSTON** hereby declare that I have read the completed Risk Management form and hereby confirm that the information is to the best of my knowledge true and correct.

Furthermore, I declare that I am fully aware of my responsibilities in terms of the Waste Exclusion Regulations, and that failure to comply with these Regulations may constitute an offence in terms of the National Environmental Management: Waste Act, 2008 (Act 59 of 2008).

Applicant (Full names) **WARREN FUNSTON**

Designation **MANAGER: BIODIVERSITY AND WASTE**

Signature



Date **20 September 2018**

Place **JHB**

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Date Received				
Decision Taken	Authorised	Not authorised (provide reason)		
Reference Number				