



GUIDELINE FOR COAL TRADE AND USAGE AS FUEL FOR CEMENT AND THERMAL POWER PLANTS AT SEZD

ENVIRONMENTAL AFFAIRS DEPARTMENT

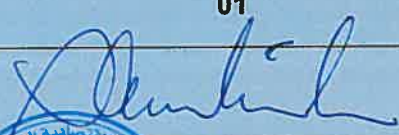
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ABBREVIATIONS AND DEFINITIONS

BAT	Best Available Technique
be'ah	"be'ah" established in 2007 was granted the mandate and the legal status as the entity responsible for solid waste management in the Sultanate of Oman by Royal Decree No. 46/2009.
CO	Carbon Monoxide
CCW	Coal Combustion Wastes
CEMS	Continuous Emissions Monitoring Station
EHS	Environment Health and Safety
EIA	Environmental Impact Assessment
ESP	Electrostatic Precipitator
EU	European Union
FGD	Flue Gas Desulphurisation
GIIP	Good International Industry Practice
HCL	Hydrogen Chloride
HF	Hydrogen Fluoride
IR	Infra-Red
INDC	Intended Nationally Determined Contributions
IFC	International Finance Corporation
MD	Ministerial Decision
NG	Natural Gas
NOx	Nitrogen Oxides
PM _{2.5}	Particulate matter 2.5 micrometres or less in diameter
PM ₁₀	Particulate matter 10 micrometres or less in diameter
PCDD/F	Polychlorinated dibenzo(p)dioxin and furan
RD	Royal Decree
SEZAD	Special Economic Zone Authority Ad Duqm is the authority designated by RD119/2001 responsible for the management, regulation, and development of all economic activity in the SEZD.
SEZD	Special Economic Zone at Duqm represents the land area demarcated in Royal Decree (RD) 119/2011 and subsequently RD 44/2014 and RD 5/2016
SO ₂	Sulphur Dioxide
TOC	Total Organic Carbon
WBG	World bank Guideline
WHO	World Health Organisation
UK-EA	United Kingdom – Environment Agency
USEPA	United States Environment Protection Agency

GUIDELINE FOR COAL TRADE AND USAGE AS FUEL FOR CEMENT AND THERMAL POWER PLANTS AT SEZD

1 INTRODUCTION

In view of the special nature of coal usage as a source of fuel for industrial purposes in general, there are certain standards and requirements for coal usage, import, and shipping, loading in ports, transport, storage and trade. Coal usage as fuel for combustion also causes environmental issues which requires proper planning and management.

This document provides guidelines to be followed for coal trading and usage as fuel for Cement and Thermal Power Plants at SEZD.

2 REQUIREMENTS FOR CEMENT AND THERMAL POWER PLANTS USING COAL AS FUEL

2.1 LOCATION

- When choosing the location of the plants using coal as fuel, the concerned should ensure that the location has no negative impact on neighboring industries, or land-use in adjacent areas, furthermore, a safety zone shall be allocated in accordance to Environmental Impact Assessment (EIA) study.
- The appropriateness of the location must be based on EIA study & dispersion of pollutants model study; no locations shall be permitted before providing these researches.
- SEZAD will be the final authority to approve the location of the proposed plants.

2.2 COAL TYPE AND QUANTITIES

- Type of coal selected must have high heat content, low ash and should be low Sulphur coal.
- Approval must be taken from SEZAD on the type of coal selected for use as fuel.
- Preparing & cleaning processes of coal must be carried out in the issuing country before its delivery to the plant or production site, & no cleaning processes is allowable in the plant.
- Annual requirements of coal for the plants is defined according to production capacity which must be clearly mentioned in the EIA report.

2.3 IMPORT

Plants may import packaged coal until completing the procedures relating to shipping, loading, storing & trading, only after obtaining the necessary environmental permits.

2.4 LATITUDE

Licensed plants shall not lend any amount of the allocated coal to other parties that has no permission to use.

2.5 COAL GRINDING

- Grinding & sifting processes must be carried out indoor, and air pollution control measures must be applied (such as fabric filters) and special equipment for combating ignition.
- Grinded coal must be stored in silos, equipped with Carbon Monoxide (CO) monitor devices.

2.6 FEEDING FURNACE WITH COAL

- Furnace must be fed with grinded coal through air transmission pipes (pneumatic transport) or closed conveyor system.

2.7 PRODUCTION TECHNIQUES & POLLUTION MONITOR & CONTROL

- Production processes and stages must use the most advanced international technics available.
- Devices for control & reduction of various resources emissions must be installed and operated before starting pilot operations.
- Top international systems available must be applied to raise energy usage efficiency & reduce generating various types of waste.
- Flue must be equipped with emission frequent monitor devices and surveillance cameras.
- Burning systems of furnace must be designed in a way that enables transition from solid coal systems usage to liquid and gas coal systems.
- Periodic schedule must be set for maintenance procedures and good housekeeping in all of the facilities and plant components.

2.8 PLANT STORAGE REQUIREMENTS

- All loading, unloading & trading processes in the operations area must be carried out mechanically, using hermetic equipment & the maximum height of the compressed piles must be 9 meters above ground level, and uncompressed piles of coal must be 5 meters high above ground level.

- Water spray systems must be installed for coal piles to avoid dispersal of coal dust and ensure that humidity of coal piles is between (10- 15%), provided that storage floor is leak proof equipped with a system for generated water collection, treatment & reuse.
- Fence line monitoring devices must be installed to monitor dust and particles under the typical direction of wind.
- CO monitoring devices must be installed in the loading area, & in the automatic transport systems & storage area to monitor any self-ignition process.
- IR cameras may be used for early warning of hot spot within piles.
- Coal dust must be swept from floors, internal roads & safely disposed. The plant shall ensure that there is enough space for machine sweeping vehicles movements.
- Coal storage location shall not be used for any other purpose.

In addition, following measures shall be taken for the storage silos at the Plant in order to reduce dust emissions to the atmosphere:

- All silos should be fitted with an automatic system or an alternative technique, to cut off delivery, in the event of pressurization or overfilling to avoid excess emission of dust to the atmosphere.
- Silos shall be designed such that accidents like dust explosion are avoided.
- Control measures for dust emissions (filtration bags) shall be installed in the silos.
- Adequate sized pressure relief valves to be fitted to silos and PRVs to be maintained and operated correctly so as to prevent over-pressurization of silos.

3 GENERAL REQUIREMENTS AND SPECIFICATION FOR COAL TRADING

- The responsibility of the facility using coal as fuel starts from the exist of coal ship from the place of its production or the port in case of importing it including transport, trade, burn and waste disposal.
- The plant must conduct EIA study in accordance with Omani Regulation and/or international regulation and best practice and must include storage stages, coal usage, safe disposal of coal ash, in addition, to the results of modeling dispersion of pollutants, detailed analysis of the proposed plant alternative locations & a description of its connection to the adjacent maps.
- Permits for coal import or transport from the port shall be issued by SEZAD after approving EIA study of plant ensuring that it meets all of the requirements as described in the regulation.
- For renewal of coal import, export or use permits, there should be annual report of environmental performance submitted to SEZAD.
- The licensed party must be responsible for any damages that may occur to the environment resulting from negligence of the requirements for using coal as fuel and it shall repair these damages, and return the environment to its previous condition on its own expense.

- If the execution violated the recommendations of the EIA study, the concerned party should set a plan for repairing the situation, if SEZAD approves the plan, then the plan is evaluated as per the indicators of gas emissions quantity, dust & particles, waste water discharges, solid wastes disposal, noise quality through submission of monthly reports.

4 SPECIAL REQUIREMENTS AND SPECIFICATION FOR COAL TRADING

- In case of importing coal, ports management receiving coal is responsible for safe trading monitor of coal at the port adhering to international and best practice environmental standards on shipping & loading. Officials of SEZAD granted as the status of Judicial police may enter the port to monitor and supervise, and take necessary legal procedures in case of a violation.
- The companies and facilities trading with coal and ports management are subject to environment protection laws, pollution combating and the requirements available in this regard.
- Coal may not be stored outside the licensed facilities to trade and use without obtaining environmental approval as per EIA study.

5 REQUIREMENTS AND SPECIFICATION OF SHIPPING & LOADING COMPANIES

5.1 SHIPPING AND LOADING IN PORTS

- Port must design infrastructure (e.g. buildings, quays, berths, bridges, foundations, slopes, storage, transport, embankments, breakwaters, storm water drainage; etc.) needed to import coal as per best international practices.
- Coal loading from vessels to trucks must be through hermetic machines to reduce the environmental impacts during shipping & loading processes.
- No coal shall be discharged in quays, operation grounds, and anchor area even if temporarily.
- The area between the vessel and the port berth must be covered with fabric curtain of high density polyethylene or any other equivalent material in power to protect marine life, in case of using closed grabs.
- The companies shall commit to sweeping floating dusts and particles to combat water pollution with coal dust.
- Conveyor belts must be covered from all sides adequately.
- Loading & discharging processes must be suspended during exceptional weather conditions by a decision from the management of the competent port.

5.2 TEMPORARY STORAGE IN PORTS

- Storage must be in the form of hemispherical stores, or hangers in the form of shed with three closed corners & one open corner covered with curtain in the form of slides, to allow access of equipment. The store must have good ventilation to reduce concentration of gases like Methane, CO, which results from self-oxidation process of coal during storage.
- The height of compressed piles must be 9 meters above ground level, uncompressed piles shall be 5 meters high above ground.
- Water spray systems must be installed for coal piles to avoid dispersal of coal dust and in case of using water, humidity of coal piles must be adequate (between 10-15%).
- Storage ground must be leak-free and equipped with a system for generated water collection, & treatment.
- Conveyor belts must be made of ignition-free material.
- Storage period in any condition shouldn't exceed 1 month starting from coal arrival to the port and up until its export.
- Constant monitoring systems (fence line system) must be installed for monitoring particles on the expense of the shipping and loading company, located close to port fence under typical wind direction.
- IR cameras may be used for early warning of hot spots within piles.
- Cleaning process must be carried out for floors, stores, devices and equipment, removing coal dust and disposing it safely.

5.3 OUTER STORAGE TERMINALS

Facilities may obtain a permit from competent administrative bodies to manage and operate intermediate terminals for temporary storage of coal, after getting SEZAD's approval as per the following:

- Storage terminals shall be appropriately located, away from any population centers, tourism facility, medical or sensitive ecological systems.
- No Storage terminals shall be built on farming lands, highway grounds, wadies, falajes, bays or any sensitive area.
- Storage shall not exceed 1 month in the outer storage terminal, in case of storage for longer periods, fence line monitoring devices must be installed, under the typical direction of winds.
- Storage shall be in the form of piles through either of the below methods:
Closed places: inside hemispherical stores, or hangers in the form of shed with three closed corners & one open corner covered with curtain in the form of slides, to allow access of equipment. The store must have good ventilation to reduce concentration of gases like Methane, CO, which results from self-oxidation process of coal during storage.
Open places: open places allocated for storage equipped with wind prevention boards designed as per the international standards.

- The height of compressed piles must be 9 meters above ground level, uncompressed piles must be 5 meters high above ground, and coal piles must be covered with polymeric covers with water spray systems to stable coal dust & avoid its dispersal and ensure piles humidity percentage is adequate, between (10 - 15%).

6 STANDARDS & REQUIREMENTS FOR COAL TRANSPORT

- Transportation vehicles must obtain the required permits from the competent bodies.
- Hermetic tools and equipment must be used for shipping and loading and coal must be covered or transported in sealed container to ensure no spoil or leak during transportation.
- The concerned party must identify the locations of transportation vehicles and distribute it.
- The shipment must be sprayed with sprinkled water to reduce emissions before transporting it.
- The facility licensed to use coal must identify the routes in coordination with the concerned parties.

7 ENVIRONMENTAL REQUIREMENTS FOR CEMENT AND THERMAL POWER PLANTS UTILISING COAL AS FUEL

7.1 GENERAL REQUIREMENTS

- Plant must commit to conduct EIA study for the project addressing the environmental impacts of the project and the environmental management plans and mitigations required to deal with the impacts to minimize pollution;
- EIA study must be done in accordance with Omani Regulation and/or international regulation and best practice and must include storage stages, coal usage, safe disposal of coal ash, in addition, to the results of modeling dispersion of pollutants, detailed analysis of the proposed plant alternative locations & a description of its connection to the adjacent maps. SEZAD will review and approve submitted EIA with environmental permit conditions;
- Plant shall apply Best Available Technologies (BAT) for all process in the Cement manufacturing and Thermal Power plant fueled with coal and must be detailed in the EIA study;
- BAT Compliance Certificate must be submitted to SEZAD for verification of BAT technology used in the facility design;
- Natural gas shall replace diesel oil/coal as fuel in the proposed plant, to reduce emissions, once NG becomes available in Duqm;
- Diesel oil shall be preferred over coal as fuel for firing the kilns;
- The stack height of cement kiln, power plant stacks, and any associated stacks shall be as specified in MD 118/2004 or as per Good International Industry Practice (GIIP)

whichever is stringent to avoid excessive ground level concentrations and minimize impacts;

- Raw material and product handling, transport and storage shall be such that dust emissions are minimized. Closed conveyors shall be used for transferring material and product to trucks from the storage area;
- Cement grinding shall be carried out in closed cement mills. Provision of dust extraction and pollution control system shall be made for emission control. Highly efficient ESP, cyclone separator, pulse jet bag filters, etc. shall be provided for raw material handling and packing section, mills, silos, storage areas etc;
- Finished product should be collected in silo and packaging should be done through pneumatically controlled system;
- Cement packing units shall be equipped with filters cloth for reducing dust emissions during operations and packaging;
- All vibrating screens, storage bins etc. shall be adequately covered. Covered storage yards shall be provided for raw materials. Closed unloading of raw material and closed conveyor belts for transportation with bag filters at transfer points shall be provided by the Company;
- All chemicals used in the plant or produced therein shall be registered and required permits shall be obtained. All related documentations should be submitted to SEZAD;
- Spill prevention and Response Plan must be included in EIA study;
- Air emission sources from the plant operation and activities must be identified and best practices control measures/techniques adopted shall be included in the EIA study;
- The technical details of all pollution controlling and waste management system, proposed at the plant, shall be submitted to SEZAD prior to operational phase;
- Pollution controlling equipment's like low NO_x burner, selective non-catalytic reduction, wet gas scrubbers, fabric filters (bag houses), Electrostatic Precipitators (ESP), Flue Gas Desulfurisation (FGD) shall be installed to reduce NO_x, SO₂, CO emission from the kiln firing process of the cement plant and boilers, engines of Thermal Power plant;
- BAT shall be applied to reduce TOC, HCl, HF, polychlorinated dibenzo-p-dioxins and dibenzofurans (PCDD/F) from kiln process, as applicable and included in EIA study;
- Continuous emission monitoring system (CEMS) shall be installed at the stack for critical pollutants such as NO_x, CO, SO₂, Particulate Matter (PM₁₀/PM_{2.5}), and result submitted to SEZAD monthly;
- Periodic monitoring of HCl, heavy metals, HF, TOC and PCDD/F shall be carried out by the Company and report submitted to SEZAD;
- Noise generating sources from the plant operation and activities must be identified and noise control measures/techniques adopted shall be included in the EIA study;
- Air Dispersion Modeling and Noise Propagation Modeling shall be included in EIA study;
- Details on the type of wastewater (domestic, industrial, chemical etc.) generated from the process activities, waste water treatment plant proposed, if any and a plan for re- use of treated wastewater and treated sludge, as applicable, shall be included in the EIA study;

- No waste generated from the project activity shall be discharged into the land or marine environment without approval from SEZAD;
- Thermal discharge from Plants shall be designed to ensure that discharge water temperature does not result in exceeding relevant ambient water quality standards outside a scientifically established mixing zone;
- Solid waste like dust generated from the plant shall be properly recycled and reused in the plant itself;
- Attempts must be made to re-cycle Coal Combustion Wastes (CCW) such as fly ash bottom ash, boiler slag and FGD sludge for beneficial uses as far as feasible;
- Solid waste generated from the project shall be identified and the company shall obtain an agreement with be'ah company which agrees to accept the wastes;
- For wastes not accepted by beah, the Company shall provide temporary on-site facility and subsequent treatment/disposal/storage method shall be proposed and submitted to SEZAD, prior to commissioning, as per MD 18/93;
- Prevention and Control Management of Chemical Hazards and Fire and Explosion Hazards must be addressed in EIA study;
- Traffic Management Plan shall be included in the EIA study;
- The plants must be responsible for any damages that may occur to the environment resulting from negligence of the requirements for using coal as fuel and it shall repair these damages, and return the environment to its previous condition on its own expense;
- **Global Warming:** Plants using coal as a fuel must reduce the emission of global warming gases resulting from burning of coal which must be covered in EIA study and Environment performance reports consistent with the Intended Nationally Determined Contributions (INDCs), the plan for controlling the increase in these emissions which was presented by the Sultanate to the climate change agreement in Paris conference which was held by the end of 2015;
- **Periodic Review Plan:** Plants must commit to implement periodic review plan of emissions within the framework of Omani regulations, based on the recommendations of the multilateral agreements of climate changes.

7.2 REGULATORY REQUIREMENTS

The Special Economic Zone Authority of Duqm (SEZAD) has been established under the provision of the Royal Decree no 119/2011 issued on 26th October 2011 and with authority to manage, regulate and develop all economic activities in Duqm and issue permits.

With regards to project developments in the area of SEZD, following Royal Decrees and guideline provides governance:

- RD No. 79 of 2013 "Issuing the Regulations of the Special Economic Zone at Duqm"
- RD No. 44/2014 "lifting the capacity of a public utility from some of the schemes within the scheme of the Special Economic Zone Authority at Duqm;
- Decision number 326/2015 "Issuing the Bylaw Regularising the Environmental Permits of the Special Economic Zone at Duqm

- RD No. 5/2016 "Extension of the Duqm Special economic Zone to include the Ras Markaz Crude Oil Park
- SEZAD 2017 "Environmental Impact Assessment Guideline"

7.2.1 OMANI LAWS AND REGULATIONS

Environmental policies for sustainable development in Oman are supported by legislations in the form of Royal Decrees (RD) and Ministerial Decisions (MD).

Relevant Omani legislations to which the plant must comply include:

- RD 114/2001 Law of Environment Conservation and Pollution Prevention
- MD 118/2004 Regulation on Controlling Air Pollution from stationary sources
- MD 79/94 Regulation for Noise Pollution control in Public Environment
- MD 80/94 Regulation for Noise Pollution control in Working Environment
- MD 57/2002 Regulations for the Management of Solid Non-Hazardous Waste (amends MD 17/1993)
- MD 56/2002 Regulations for the Management of Hazardous Waste (amends MD 18/1993)
- MD 77/1998 Prohibits Illegal Dumping of Re-use and Littering
- RD 29/2000 Law of Protection of Water Resources
- RD 115/2001 Protection of Sources of Potable Water from Pollution
- OS 8/2012 Omani Standard for Unbottled Drinking Water
- MD 264/2000 Regulations on Wells and Aflaj
- MD 55/2002 Regulations for Wastewater Re-use and Discharge
- MD 421/1998 Regulations for Septic Tanks, Soakaway Pits and Holding Tanks
- MD 159/2005 Regulation for Discharge of Liquid Effluents into the Marine Environment
- MD 8/1984 Discharge of Industrial Water into Public Sewer Networks
- MD 281/2003 Regulations for the Management and Control of Radioactive Materials (amends MD 249/1997)
- MD 81/2002 Importing, Moving, Storing and Using Radioactive Substances
A separate environmental permit from SEZAD shall be obtained to use radioactive substances or radioisotopes equipment;
- RD 46/1995 Law on Handling and Use of Chemicals
- MD 68/2000 Registration of Chemical Substances and relevant Permits (amends MD 248/1997)
- MD 25/2009 Regulations for Organisation of Handling and Use of Chemicals
A separate permit from SEZAD shall be obtained to Handle Chemical Substances
- MD 317/2001 Regulation for the Packing, Packaging and Labelling of Hazardous Chemicals
- MD 20/2016 Issuing the Regulations for the Management of Climate Affairs (amends MD 18/2012)
- MD 37/2001 Control and Management of Ozone Depleting Substances
- MD 243/2005 Regulations for Control and Management of ODS

- MD 53/2013 Regulations for Obtaining Approvals of Clean Development Mechanism Projects under the Kyoto Protocol (amends MD 30/2010)
- MD 117/2013 Guidelines for the Preparation of Climate Affairs Chapter in EIAs
- MD 39/2004 Marine Environmental Management By-Laws
- MD 286/2008 Occupational Health and Safety Framework

7.2.2 REGIONAL AND INTERNATIONAL CONVENTIONS

Oman is also a signatory to a number of regional and international conventions which must be considered during development of new projects and management of projects. These conventions and the date of Omani adoption include:

- 2015 Intended Nationally Determined Contributions (INDCs), the plan for controlling the increase in Green House Gas emissions which was presented by the Sultanate to the climate change agreement in Paris conference
- 2014 Convention on Wildlife and Natural Habitats in the GCC States
- 2012 Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in Chemical Trade
- 2008 Convention on International Trade in endangered Species of Wild Fauna and Flora
- 2005 Kyoto Protocol to the UN Framework Convention on Climate Change
- 2004 Amendment to the Basel Convention on the control of trans-boundary movements of hazardous wastes and their disposal
- 2001 Stockholm Convention on Persistent Organic Pollutants
- 1999 Amendment to the Montreal Protocol on substances that deplete the ozone layer
- 1999 Regional Organization for the Protection of the Marine Environment
- 1997 International Plant Protection Convention – New revised text approved by resolution 12/97 of the 29th Session of the FAO Conference in November 1997 – Declaration
- 1997 Amendment to the Montreal Protocol on substances that deplete the ozone layer
- 1995 Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks
- 1994 Agreement relating to the Implementation of Part XI of the United Nations Convention on the Law of the Sea (UNCLOS) of December 1982
- 1994 United Nations Convention to Combat Desertification in Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa
- 1992 Amendment to the Montreal Protocol on substances that deplete the ozone layer (London Amendment)
- 1992 Convention on Biological Diversity
- 1992 United Nations Framework Convention on Climate Change
- 1990 London Amendment to the Montreal protocol on substances that deplete the ozone layer

- 1989 Basel Convention on the control of Transboundary movement of hazardous wastes and their disposal
- 1987 Montreal Protocol on substances that deplete the ozone layer
- 1985 Vienna Convention for the Protection of the Ozone Layer
- 1982 United Nations Convention on the Law of the Sea (UNCLOS)
- 1981 Convention on the Protection of the World Cultural and Natural Heritage (world Heritage Convention), Paris
- 1959 International Maritime Organization

The international convention which are relevant in managing the air quality around a region are as follows:

S No.	Convention	Description
1	Intended Nationally Determined Contributions (INDCs), 2015	The plan for controlling the increase in Green House Gas emissions which was presented by the Sultanate to the climate change agreement in Paris conference
2	Kyoto Protocol (2005) and United Nations Framework Convention on Climate Change (UNFCC), 1992	Under this Convention, Member States have an obligation to improve energy efficiency, protect sinks and sources of greenhouse gases, promote sustainable agriculture, promote renewable energy and sequestration of CO ₂ , and control emissions of greenhouse gases. This agreement also aims at mechanisms of providing monetary and technology benefits for reducing emissions.
3	Montreal Protocol on substances that deplete the ozone layer (1987)	Is a protocol to the Vienna Convention for the Protection of the Ozone Layer designed to protect the ozone layer by phasing out the production of numerous substances believed to be responsible for ozone depletion.
4	Vienna Convention on the protection of the ozone layer (1985)	Acts as a framework for the international efforts to protect the ozone layer

7.2.3 INTERNATIONAL GUIDELINES AND BEST PRACTICES

In addition to Omani environmental regulations, the plant must, where relevant, take into account 'as a Best Practice' environmental standards/guidelines developed internationally, in particular those developed by:

- World Health Organization (WHO)
- World Bank Guidelines (WBG)/ International Finance Corporation (IFC), General EHS Guidelines and Industry specific guidelines
- United States Environmental Protection Agency (USEPA)
- European Union (EU)

7.3 EMISSION LIMITS FROM STATIONARY SOURCE USING COAL AS FUEL

As there are no emission standards outlined in MD 118/2004 from stationary sources using coal as fuel, international standards were referred and Oman being a signatory to a number of international conventions, the most stringent ones are adopted.

Table No. 1 provides the maximum allowable limits of emissions from a fixed source using coal as fuel:

Table No. 1: Standards for pollutants emissions from a fixed source using coal as fuel	
Pollutant	Concentration(mg/m ³) unless otherwise is provided
Particulate Matter	30
Total solid particles to the coolant piping and cement mills and coal	30
Sulfur dioxide	100
Nitrogen oxides	100
Total organic carbon	10
Hydrogen chloride	10
Hydrogen fluoride	1
Dioxin /furan	0.1 Nano gm /m ³
Mercury steam	0.03
Cadmium, thallium	0.05
Antimony, Arsenic, lead, cobalt ,chrome, copper, manganese, nickel ,vanadium	0.5

7.4 ENVIRONMENTAL MONITORING

- Environmental Monitoring and Action Plan must be outlined in detail in EIA study for all the activities that have been identified to have potential impacts on environment.
- Monitoring frequency should be sufficient to provide representative data for the parameter being monitored.
- All monitored data should be analysed and reviewed at regular intervals and submitted to SEZAD on monthly basis.