

# STUDY OF ENVIRONMENTAL POLLUTION BY EFFLUENT EMISSIONS OF SAINDAK PROJECT REGION OF BALOCHISTAN - A CASE STUDY.

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**ABSTRACT:** The goal of presenting work is to emphasize the Environmental issues that emerged due to affluence by effluent emissions of Saindak project. The issues have been argued and the probable suggestions presented. This area is attaining significance due to its geodetic status and consequently contributing to the economic development of Pakistan. However, its environmental hazards due to effluent emission endangering the health of the population need to be addressed. The emission of gases, in particular, poisoning the atmosphere with detrimental effects not only on the health of living beings, at the same time, effecting the fertility of green belts and the cross-section of the agriculturally productive land in the proximity of the project area. As a result of qualitative and quantitative work, some suggestions have also been made likely to secure the environments from the pollution hazards. The awareness of the population has also been asserted for guarding against this stale and unpleasant state. Conventional techniques were used to achieve the qualitative and quantitative results.

**Keywords:** Environmental Pollution, Toxicity, Environmental Standards, Effluent Emissions.

## INTRODUCTION

Fundamentally, hydrosphere, lithosphere, atmosphere, and biosphere construct our environment. It persists hygienic and pleasing if no pollutant turns out to be active. The interconnection of these spheres are continuing for ages associatively well-organized. In view of the several doings of humans, the arrangement and intricate natural surroundings of environs have become differed. Such doings and actions contain industrial development, manufacture, production, mechanization, automation, and shipping. Though these activities are required for human growth and prosperity directs and drives to construction and waiver of obnoxious tools and provisions into the surroundings consequently turn out in nasty, and transforming our lives into a miserable state. Our natural environment is fresh and unpolluted, but because of the miscellaneous actions of humans, it turns out to be polluted consequent in a stale state we called it environmental pollution. Keeping our environment hygienic and fresh by curbing manufacturing accomplishments, should be our priority. On the other hand, with the intention of keeping pace with the prompt industrial development worldwide, an economically underdeveloped country like Pakistan can't provide to seizure its industrialized progression.

Amongst the developing countries, Pakistan is the foremost nation to take note of the degradation of the environment. In 1972, in the world environmental conference held in Stockholm, our government declared that it is their responsibility to control pollution in India. Even during a recent global conference held at Kyoto in Japan, Pakistan accepted the responsibility of reducing global warming and depletion of the ozone layer by banning the use of chloro-fluoro carbons in cryogenic engineering within a stipulated period. Even in the recent conference held in Rio-de-Janeiro, Pakistan declared solidarity by conforming to the standards as stipulated by the United States Environmental Protection Agencies (US-EPA). But perhaps India was the foremost country in third Pakistan & China on 22nd of March of 2002 resurrected this project with the worth of \$350M allocated for progressive advancement. These conditions are extraordinarily disparaging for Balochistan and its citizens. MRDL (MCC: Metallurgical Construction Company of

China) Resource Development Ltd will administrate to return one-half of gross-income from mineral trades and also pay \$500,000 once-a-month scheduled to Pakistan for the next 10 years. Balochistan will collect back merely \$0.7M/y as copyright-royalties. These factual statements interpretative the aggregate indifference of Baloch's civil rights by the Centre.

World to implement rigorously pollution legislation, both for air and water. It is accepted the stipulated levels of the pollutants in act designated as 'maximum permissible level' to be implemented in successive stages in a few years.

Pollution is the introduction of contaminants into the natural environment that cause adverse change [1]. Pollution can take the form of chemical substances or energy, such as noise, heat or light. Pollutants, the components of pollution, can be either foreign substance/energies or naturally occurring contaminants. Pollution is often classed as a point source or nonpoint source pollution. The general scene of pollution on the surface area of the earth at the suburb of Saindak is given below by Figure-1.



Figure-1. Pollution at the suburbs of Saindak

**Saindak Copper-Gold Mine** is found in the Chagai district near Saindak town, Balochistan. At Saindak in the 1970s, the copper discovery was made in collaboration with a Chinese engineering firm. The fully-funded company by the Government of Pakistan at PKR 13.5 billion by the end of 1995 called Saindak Metals Ltd was set up Saindak Copper-Gold Project. A formal contract of \$350 million between Pak-China has signed for ten years. According to the signed contract, 50%, 48% and 2% revenues go to MCC, GOP and GOB [4]. The plant of the Saindak project is given below in Figure-2.



**Figure-2. Plant of Saindak project.**

A renowned trade and financial specialist Syed Fazl-e-Haider, states, “The Saindak tale is also a narration of mal-administration in trade and business as well as administrative misgovernment by government organizers and financial directors in Islamabad. A designated plan initially assessed to total 6 billion-Rupees finished up estimation exceeding 14 billion-Rupees.” [5]

Deputy-Chairperson of an internationalized enviroined company Oceana, Marcel Claude narrates, “Gold mines landfills 79tons of trash/0.061 pounds of gold, and yields 96% of the entire territory’s arsenic emanations. A ton has one million grams, so mining 7.746tons will end in a monstrous amount of 218,547,857.14 tones’ of discarded material, relatively adequate to quagmire Saindak and its surroundings.

Certainly, this section will immediate indictments that are opposed of developmental advancement. Dynamically differing transaction of exquisite approaches of the public for a trifle by corrupt officials and corrupt state-run employees and their demolition carried out under the label of progressive advancements.

The Baluch are incessantly bared adequately by the Centre and here the Chinese have joined hands. The reserves existing at Saindak-Narrative and Reko-Diq aren’t going anywhere if they persist unexploited by Barrick-Goldor the correspondingly avaricious Metallurgical Construction Company of China. All loot under the label of ostensible advancement requests to be static instantly and the opinions of the society observed.

## RESULTS AND DISCUSSION

Saindak-Narrative thoroughly corroborates that Baloch’s demurrals and antagonism at intemperate corruption of their worthy assets are reasonable. They never showed agreement to these ostensible developmental progressive schemes and high-esteemed plans and all the pretended advancements is conducted underneath the fortification of the armed forces or legionnaires. The Baloch-people utterly comprehend the undesirable effects of these developments to their contemporary and forthcoming due to interminably suffering, dispossession and destruction. They are fully aware of the province’s situation that greater the developments and lower their survivability. The provider and funder is a self-employed author [8].

Balochistan has been in underdevelopment deception. Its human and material assets persisted unexploited, as it had never been on priority in the progress scheme of the Central government as demanded by Balochistan.

In2004, the government set up water levels but a nationally monitoring system of water excellence has not yet been established. The government has also announced unleaded gasoline to regulate atmospheric affluence, and Pakistan is now amid the world’s largest

users of compressed natural gas vehicles.

However, mutual concessions of bribery are an illegal action carrying a punishment of sequestration of belongings and assets, incarceration, repossession of fraudulent money, termination from vocation and a decline in ranking. Corruption and sleaze remain prevalent in Pakistan. Pakistan’s position in Transparency International’s The Corruption Perceptions Index fell from 92 out of 133 states in 2003

to 129 out of 145 states listed in 2004 because of which the Atmospheric Effluence checking and observing like of Saindak Project was overlooked.

Laws and regulations of Pakistan leading the battle against corruption in terms of bribery, exploitation, and fraud comprise the Prevention of Corruption Act-1947, the Efficiency and Discipline Rules-1973 and in recent times, the National Accountability Bureau (NAB) Ordinance-1999. Previously, the NAB, the Federal Investigation Agency (FIA) and Provincial Anti-Corruption Departments shared official accountability for combating corruption. In October 2002, Pakistan’s cabinet approved a National

Anti-Corruption Strategy (NACS) that identified areas of pervasive corruption and recommended time-bound measures and reforms to combat corruption . The NACS also named the NAB as the sole anticorruption agency at the federal level as in case of Saindak Project’s Environmental pollution feasibility report misrepresented without any check and balance of the said project Federal Government Agencies of

NACS and NAB. In the course of construction and manufacturing activities, the solid trash to be produced are:

- ◆ Bricks' residues
- ◆ Leftovers of Quality Control Measurements
- ◆ Paper-Sacks
- ◆ Residues of lubricants and fuel applied
- ◆ Remains of metallic ores
- ◆ Discarded wooden material
- ◆ Medicinal discarded material
- ◆ Unused or discarded drums and containers
- ◆ Cotton pieces
- ◆ Assorted waste: It comprises a mass of stuff like batteries, tires, tubes, filters, belts, nylon strips, scrap wood, steel scrap, household articles etc., which will be sold in the marketplace through scrap dealers.

SML (Saindak Metal Ltd.) presented factual statistics in May-2009, as informed by Daily-Times [9] that 7.746tons of gold, 86,013tons of copper, 11.046tons of silver and 14,482tons of magnetite concentrate (iron) cost \$633.573M were produced for the duration of 2004-2008.

A renowned trade and financial specialist Syed Fazl-e-Haider, states, "The Saindak tale is also a narration of mal-administration in trade and business as well as administrative misgovernment by government organizers and financial directors in Islamabad. A designated plan initially assessed to total 6 billion-Rupees finished up estimation exceeding 14 billion-Rupees." Northerner publishing manager of www.protestbarrick.net, namely Sakura Saunders[7] and a director of PRP (Prometheus Radio Project) narrates that the 7.746tons of goldmine will end in 15,740,598.8tons of left-over and 11.046tons of silver mine would yield 7,482,169.33tons of left-over. Though if mined from the similar metallic substances, the resultant waste approximation would be 15,740,598.8tonnes. She stated that these assessments are of oilfield reservoirs' trash, creating a fragment of waste that covers several pollutants as well toxins, for instance, cadmium, arsenic, arsenic, and so on as given in Figure-3.



**Figure-3. Waste effluent emissions pollution of the Saindak Project.**  
While the general of the standards of the emissions is given in table-1 below.

**Table-1. NATIONAL ENVIRONMENTAL QUALITY STANDARDS FOR INDUSTRIAL GASEOUS EMISSION (mg/Nm<sup>3</sup>, UNLESS OTHERWISE DEFINED)**

S.No.	Parameter	Source Of Emission	Existing Standards	Revised Standards
1.	Smoke	Smoke opacity not to exceed	40% or 2 Ringlemann Scale	40% or 2 Ringlemann Scale or equivalent smoke number
2.	Particulate matter <sup>(1)</sup>	(a) Boilers and furnaces:		
		(i) Oil fired	300	300
		(ii) Coal fired	500	500
		(iii) Cement Kilns	200	300
		(b) Grinding, crushing, clinker coolers and related processes, metallurgical processes, converters, blast furnaces and cupolas	500	500
3.	Hydrogen Chloride	Any	400	400
4.	Chlorine	Any	150	150
5.	Hydrogen fluoride	Any	150	150
6.	Hydrogen sulphide	Any	10	10
7.	Sulphur Oxides <sup>(2)(3)</sup>	Sulfuric acid/Sulphuric acid plants	400	5000
		Other Plants except power Plants operating on oil and coal	400	1700
8.	Carbon Monoxide	Any	800	800
9.	Lead	Any	50	50
10.	Mercury	Any	10	10
11.	Cadmium	Any	20	20
12.	Arsenic	Any	20	20
13.	Copper	Any	50	50
14.	Antimony	Any	20	20
15.	Zinc	Any	200	200
16.	Oxides of Nitrogen <sup>(3)</sup>	Nitric acid manufacturing unit	400	3000
		Other plants except power plants operating on oil or coal:		
		Gas fired	400	400
		Oil fired	-	600
		Coal fired	-	1200

**Explanations:**

Based on the assumption that the size of the particulate is 10 micron or more.

Based on 1% sulphur content in fuel oil. Higher content of sulphur will cause standards to be pro-rated.

In respect of emissions of sulphur dioxide and nitrogen oxides, the power plants operating on oil and coal shall in addition to National Environmental Quality Standards (NEQS) specified above, comply with the following standards:-

**Table-2**  
**A Sulphur Dioxide**

Sulphur Dioxide Background levels Micro-gram per cubic meter ( $\mu\text{g}/\text{m}^3$ ). Standards

Background Air Quality ( $\text{SO}_2$ Basis)	Annual Average	Max. 24-hours Interval	Criterion I Max. $\text{SO}_2$ Emission (Tons per Day Per plant)	Criterion II Max. allowable ground level increment to ambient ( $\mu\text{g}/\text{m}^3$ ) (One year Average)
Unpolluted	<50	<200	500	50
Moderately Polluted*	50	200	500	50
High	100	400	100	10
Very Polluted**	>100	>400	100	10

\* For intermediate values between 50 and 100  $\mu\text{g}/\text{m}^3$  linear interpolations should be used.  
 \*\* No projects with sulphur dioxide emissions will be recommended.

**Table-3**  
**B Nitrogen Oxide**

Ambient air concentrations of nitrogen oxides, expressed as  $\text{NO}_2$ , should not be exceed the following:-  
 Annual Arithmetic Mean  $100 \mu\text{g}/\text{m}^3$  (0.05 ppm)

Emission levels for stationary source discharges, before mixing with the atmosphere, should be maintained as follows:-

For fuel fired steam generators, as Nanogram ( $10^{-9}$  gram) per joule of heat input:

Liquid fossil fuel	130
Solid fossil fuel	300
Lignite fossil fuel	260

**Note: Dilution of gaseous emissions to bring them to the NEQS limiting value is not permissible through excess air mixing/blowing before emitting into the environment.**

Which must surely be aware of the grave environmental dangers that such a project will cause. Coal is a dangerous pollutant; when it is burnt, a toxic yellow chemical gas is released which is likely to spread and affect not only Balochistan,

Unfortunately, these issues are not being raised on a National or an International scale, yet the extent of the damage it may cause is extremely disturbing to environmentalists and a handful of members of the general population who are aware. Similarly, the supply of coal is diminishing and the rest of the world is moving towards Solar, Wind and Hydroelectric powered energy supplies which are more feasible and cause less pollution. The Government must take into consideration renewable resources and needs to make environmentally friendly decisions if it is as truly concerned for the benefits of the people, and the State at large, as it claims to be. Otherwise, not only will we be as sooty as Shaheen Sehbai states, but we will also be witness to a mass environmental and atmospherical crisis.

Therefore, the Environmental Impact Assessment(E.I.A)

practices entail a reconsideration of domestically and abroad Legislation, comprehensive knowledge of the recommended progress, ecological benchmark assays, influential evaluation and the development of an ecological controlling plan (EMP) to lessen undesirable influences and encourage progressive influences. An Environmental Impact Assessment is obligatory at a former phase in the development succession to attain the ecological authorization from concerned officials that sanctions the progress to ensue.

On the other hand, increasing GEMS is delivering a contribution to the hypothetical and in-depth strategy levels of the developmental sequence. This consents impending environ concerns to be acknowledged sooner, which empowers matters to structured out relatively than being alleviated at a later stage as the general pollution Problem as given in Figure-4. For minor multifarious progressive schemes wherever pertinent, we deliver an initial environmental examination (IEE) adequate to attain the obligatory approval on account of the clientele in accordance with authorized necessities.



Figure-4. General pollution Problem from emissions.

#### Highlighted Zones of Proficiency

- Coastline regions, Urban and Residential areas
- Airfields and Road and rail network
- Substantial and Light Manufacturing and trade units
- Havens and Harbors
- Lubricants and Gasoline
- Tourism Advancements
- Power Sector Schemes

However, apart from all the above, the Saindak Project is deprived from it. The ecological effluence is the most scorching issue, necessitating instantaneous consideration by the public. The controlling and regulating actions wouldn't be effective; until environmentally friendly schooling is communicated effectively from basic elementary grades to college and then university level. Our natural environment is fresh and unpolluted, but because of the miscellaneous actions of humans, it turns out to be polluted consequent in a stale state we called it environmental pollution. Keeping our environment hygienic and fresh by curbing manufacturing accomplishments, should be our priority. On the other hand, with the intention of keeping pace with the prompt industrial development worldwide, an economically underdeveloped country like Pakistan can't provide to seize its industrialized progression.

In order to ensure successful implementation, the ESMP proposes the capacity building of the relevant staff and designated focal persons through specific and tailor-made training on environmental and social impacts and mitigation measures. One- to two-days training workshops will be held at PMU Quetta and 12 one-day workshops (one in each district) during the project implementation phase. These Workshops will be geared towards enhancing the understanding of the environmental and social issues and apprising and sensitizing the participants about environmental and social importance of managing the on-ground problems associated with project activities. There should be training to train the project directors, managers, engineering team, M&E Officer and Environmental Focal Persons at provincial and district level. Refresher training will be arranged during subsequent years of project duration.

#### 4. CONCLUSIONS

Big developmental plans are going to form Balochistan an innovative midpoint of sharing and investment. The province

has grabbed the consideration of shareholders and stakeholders of other provinces of foreign countries as well. The area is attaining significance due to its geodetic status and doubtlessly the forthcoming time of Pakistan will rise from Balochistan. But it deemed too, however, it's the accurate moment and the prerequisite of the time to strain through awareness and information regarding high-scaled developmental schemes in accomplishment in Balochistan reference to the deterrence of environ effluence via wastage releases of Saindak-Project. Most of the environmental impacts of project activities are isolated small-scale and site-specific in nature and are of low to moderate significance. The majority of the impacts pertaining to construction and operation are on soil erosion and land contamination, health and hygiene issues and inconvenience to the public from improper stockpiling of the materials at the schools. Most of these impacts are of low to medium level and manageable by adopting appropriate mitigation measures during project implementation because in Saindak Project due to huge amount of the effluent emissions of sulfides there is now becoming the problem of rain acidity to land even that the Government of Pakistan can establish the factory of sulphuric acid due to the byproduct of  $SO_2$ .

#### 5. RECOMMENDATIONS

- The Pakistan Government ought to dynamically pursue the grounds of ecological fortification. It has been a party to quite a lot of worldwide pronouncements, settlements, and resolutions and has also authorized these documents. Pakistan has also formed a legislative organization and sanctioned directions for the security of the environs.
- The Govt. of Pakistan should stress on the developing of education for the eradication of illiteracy and ignorance of the Balochistan backward areas for the purpose of the development of prosperous Pakistan.

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