



KCM SmelterCo LTD
KCM (SMELTERCO) LIMITED (A subsidiary of KCM plc)

KCM/SCO/NK/13/23

14th July, 2023.

The Director-General,
Zambia Environmental Management Agency,
Corner Suez and Church Roads,
P O Box 35131,
LUSAKA.



Dear Sir/Madam,

**RE: BI-ANNUAL STATUTORY REPORT FOR KCM (SMELTERCO) LIMITED – NKANA
REFINERY**

In fulfilment of the requirements under The Environmental Management Act 2011, Environmental Management (Licensing) Regulation 112 of 2013 which requires submission of bi-annual reports to the Zambia Environmental Management Agency Inspectorate, please find enclosed a copy of the statutory report covering the licences listed below for the period January to June 2023:

1. Pesticides and Toxic Substances Licence – NDL/PTS/00673/Z10/2014/2

- Storage of Pesticides and Toxic Substances – Nkana Anode Storage Casting room, Nkana Tankhouse, Nkana Acid Storage Tank No. 1, Nkana Acid Storage Tank No. 2 and Nkana Analytical Services Department.
- Transportation of Pesticides and Toxic Substances – Nkana Refinery

2. Emission Licence – NDL/EMM/00673/Z10/2014/2

- Discharge of Effluent – East Gate into North Uchi Stream
- Discharge of Effluent – Nkana Refinery into South Uchi Stream
- Emission of Air Pollutants at No. 4 Anode Furnace Stack – Anode Furnaces
- Emission of Air Pollutants at No. 5 Anode Furnace Stack – Anode Furnaces
- Emission of Air Pollutants at No. 6 Anode Furnace Stack – Anode Furnaces

- Emission of Air Pollutants at Nkana HFO Boiler stack – Nkana HFO Boiler

3. Hazardous Waste Licence – NDL/WM/00673/Z10/2014/2

- Generation of Used Oil, Fluorescent Tubes and Batteries – Nkana Refinery
- Storage of Used Oil, Fluorescent Tubes and Batteries – Nkana Refinery
- Generation and Storage of Healthcare Waste – Nkana Clinic
- Generation, Transportation and Handling of Expired Chemicals
- Generation, storage of spent copper electrolyte

4. Waste Management Licence – NDL/LHWM/00673/Z10/2014/2

- Own and operate Slag Dam No. 67

5. Ozone Depleting Substances Licence – NDL/ODS/00673/Z10/2014/2

- Handling of ozone depleting substances (ODS)

We thank you for your continued support.

Yours faithfully,



**RAYMOND CHEEBA
REFINERY MANAGER**

CC Manager ZEMA – Northern Region

**BI-ANNUAL REPORT TO THE ZAMBIA ENVIRONMENTAL MANAGEMENT AGENCY
(ZEMA) FOR THE PERIOD JANUARY TO JULY 2023**

PART 1: The Environmental Management (Licensing) Regulations, 2013

1.0 PESTICIDE AND TOXIC SUBSTANCE LICENCE (Regulations 25, 27 and 28)

1.1 REAGENTS -REFINERY TANKHOUSE

The main reagents used for the metallurgical processing of copper at KCM SmelterCo Ltd Nkana Refinery are ligonosulphate and glue. They are ordered through Commercial, drawn and stocked at the Refinery reagent storage shed.

1.1.1 STORAGE

The reagents are kept at the refinery storage shed and transported on demand to the processing section for mixing. The Refinery reagents warehouse is constructed of a concrete floor, concrete walls and iron roofing sheets. The storage shed is secured and well ventilated. Below are the quantities of glue and lignosulphate that were consumed during the period under review:

Table 1: Reagents used at Refinery

MONTH	Glue Opening Stock (KG)	Glue Receipt (KG)	Consumed (KG)	Glue Closing Stock (KG)	Ligonosulphate Opening Stock (KG)	Lignosulphate Receipt (KG)	Consumed (KG)	Lignosulphate Closing Stock (KG)
Jan-23	31,003.05	0	292.90	30,710.15	39,941.75	0	232.15	39,709.60
Feb-23	30,710.15	0	384.71	30,325.44	39,709.60	0	300.27	39,409.33
Mar-23	30,325.44	0	474.16	29,851.28	39,409.33	0	374.77	39,034.56
Apr-23	29,851.28	0	482.18	29,369.10	39,034.56	0	376.89	38,657.67
May-23	29,369.10	0	268.18	29,100.92	38,657.67	0	209.73	38,447.94
Jun-23	29,100.92	0	291.58	28,809.34	38,447.94	0	228.19	38,219.75
TOTAL			2193.71				1722	

Note: No new stock of both glue and lignosulphate was ordered nor received at Commercial stores during the period under review.

1.2 Anode Casting Storage Room

No Barium Sulphate was used during the period under review.

1.3 SULPHURIC ACID

KCM SmelterCo Nkana refinery uses Sulphuric acid during the electrolytic refining of copper. It is used as an additive in electrolyte to refine copper anodes to copper cathodes. The transporter for Sulphuric acid from KCM SmelterCo Nchanga to KCM SmelterCo was;

AWET Investments Limited,
Plot No. 5559/6,
Kasuba Road,
Ndola.

1.3.1 STORAGE

The storage facility is surrounded by bund walls which are sufficient to mitigate exposure concerns in an event of a bulk material release. The floor of the storage area is made of impervious material and safety signs are displayed at appropriate places. Access to the area is highly restricted to deter unauthorised entry. Additionally, the area is equipped with emergency spill kits designed to contain, control and clean up spills. Below are the quantities of Sulphuric acid that was transported to KCM SmelterCo Nkana refinery during the period under review.

Table 2: Sulphuric acid received at KCM Nkana refinery

DATE	QUANTITY RECEIVED (MT)
Jan-23	90.72
Feb-23	63.18
Mar-23	91.02
Apr-23	94.76
May-23	32.12
Jun-23	63.88
TOTAL	435.68

1.4 WATER TREATMENT PLANT

Sodium chloride was used for the water treatment process at KCM SmelterCo Refinery. It is used for softening water that is used at the HFO fired boiler. The table below indicates the amount of sodium chloride that was used at water treatment.

Table 3: Sodium Chloride usage at water treatment

MONTH	Opening Stock (KG)	Receipt (KG)	Closing Stock (KG)	Consumed (KG)
Jan-23	700	0	400	300
Feb-23	400	1000	1400	0
Mar-23	1400	0	1100	300
Apr-23	1100	0	800	300
May-23	800	400	1200	0
Jun-23	1200	0	900	300
TOTAL				1200

1.5 REAGENTS – ANALYTICAL LABORATORY

KCM SmelterCo Nkana analytical laboratory uses reagents to process various elemental analysis. The analytical laboratory draws the reagents from commercial stores and stocks them in a reagent storage shed which is well ventilated; and has an impermeable concrete floor, concrete walls and secured roofing.

Table 4: Analytical laboratory reagents

No.	REAGENT NAME	OPENING STOCK (01.01.2023)		RECEIPTS		CLOSING STOCK (31.06.2023)		VARIANCE (CONSUMED)	
		QTY	UOM	QTY	UOM	QTY	UOM	QTY	UOM
1	Acetic acid	50	L	12.5	L	50	L	12.5	L
2	Ammonium hydrogen difluoride	0	GM	11500	GM	9000	GM	2500	GM
3	Cupric Sulphate	3000	GM	0	GM	3000	GM	0	GM
4	Nitric Acid	75	L	0	L	50	L	25	L
5	Potassium Thiocyanate	9000	GM	2000	GM	9000	GM	2000	GM
6	Potassium Iodide	7500	GM	9000	GM	12500	GM	4000	GM
7	Std Solution Gold 1000mg/l	0	ml	1000	ml	750	ml	250	ml
8	Iron Standard solution	0	ml	1000	ml	500	ml	500	ml
9	Std Solution Manganese 1000mg/l	0	ml	500	ml	250	ml	250	ml
10	Std Solution Silver 1001+/-2 mg/l	2500	ml	0	ml	2500	ml	0	ml

PART 2: The Environmental Management (Licensing) Regulations, 2013

2.0 EMISSION LICENCE (EFFLUENT DISCHARGE, Regulation 4)

KCM SmelterCo Nkana refinery uses various management and engineering controls to prevent effluent from reporting to the environment. KCM SmelterCo Nkana refinery has employed Zero discharge to prevent effluent discharge to the environment. Effluent generated from the plant is captured in the ponds and recycled for re-use for other plant operations.

Our Environmental Management System includes actions required to prevent pollutants from entering discharges from the mine and hence the environment. KCM is committed to not only meeting the limits set by Zambian Regulations but achieving the World Bank and IFC guidelines as part of its sustainability program.

Pollution Control Actions

The following pollution Control plans are in place;

- Regular cleaning of internal and Plant main drains.
- An effluent recycle pump that pumps effluent to the old power plant cooling water ponds to allow for settling of soluble compounds. A sand filter further treats the effluent to meet process quality requirements before being recycled back into the tank-house for re-use.
- Refinery surfaces are progressively rehabilitated to ease clean-up of any possible spills that may have a potential of ending up in the drains.
- Regular calibration of pH probes to ensure high reading efficiency.
- Programme of identifying water leaks and sealing off the same is ongoing.

2.1 EFFLUENT QUALITY IN LICENSED DRAINS

2.1.1 South Uchi

There was no effluent discharged to South Uchi during the period under review. KCM-SmelterCo Nkana is under Zero discharge. Effluent generated is captured, treated and recycled back into the system for re-use for other plant operations.

2.1.2 North Uchi

There was no effluent discharged to North Uchi during the period under review. Effluent discharged is pumped to the old power plant cooling water ponds and recycled back to the system for other plant operations. KCM SmelterCo-Nkana is under Zero discharge.

2.2 EMISSION LICENCE (EMISSION TO AIR, Regulation 4)

The permits to emit air pollutants at KCM SmelterCo Nkana refinery relates to the operations of the Anode furnaces No.4, No.5, No. 6 and HFO fired boiler. In order to comply with the general requirements of The Environmental Management (Licensing) Regulations, 2013, Konkola mine has engaged Tibon Environmental Solutions to monitor emissions from the stacks.

2.2.1 Emission Discharge at No.4, No.5 and No.6 Anode Furnaces

The operations at anode furnaces No 4, 5 and 6 were on cold standby during the period under review. No emissions were discharged to the environment.

2.2.2 Emission Discharge at HFO Boiler Stack

Table 5 HFO Boiler stack emissions

MONTH	HFO BOILER STACK			
	Dust mg/Nm ³	CO mg/Nm ³	SO ₂ mg/Nm ³	NO _x mg/Nm ³
	50	100	850	-
Jan-23	39.65	12.50	834.58	189.65
Feb-23	47.59	97.48	843.16	81.66
Mar-23	38.57	7.50	828.87	211.52
Apr-23	44.63	44.98	831.72	125.39
May-23	40.74	60.82	744.07	119.59
Jun-23	43.62	97.06	839.35	111.11

INCIDENTS RECORDED

No emission incidents were recorded during the period under review

PART 3: The Environmental Management (Licensing) Regulations, 2013

3.0 HAZARDOUS WASTE LICENCE (GENERATION AND STORAGE, Regulation 19)

The plant generates hazardous waste namely; waste oil, used fluorescent tubes and used batteries. Waste oil is stored in the used oil tank. The storage area has an impervious floor and sufficient concrete bund wall capable of containing massive bulk spills if the tank were to suffer a catastrophic leak of the liquid. Spent fluorescent tubes generated are stored and crushed in fabricated storage drums within the plant premises. Used batteries are stored in the hazardous material storage shed which is secure and has restricted access. The used batteries are disposed off through recycling/reuse through contractors.

3.1 USED OIL INVENTORY

Table 6: Shows the amount of used oil that was generated and stored during the period under review

Month	Opening Stock	Generated	Stored	Closing Stock
Jan-23	525	0	525	525
Feb-23	525	0	525	525
Mar-23	525	20	545	545
Apr-23	545	0	545	545
May-23	545	0	545	545
Jun-23	545	0	545	545
TOTAL		20	545	545

NOTE: Unit of measure is litres

3.2 USED BATTERIES INVENTORY

Table 7: Indicates the amount of spent batteries that was generated and disposed/sold during the period under review

Month	Opening Stock	Generated	Stored	Sold	Closing Stock
Jan-23	74	1	75	0	75
Feb-23	75	3	78	0	78
Mar-23	78	2	80	0	80
Apr-23	80	0	80	0	80
May-23	80	0	80	0	80
Jun-23	80	0	80	0	80
TOTAL		6	80	0	80

Note: Unit of measure is each.

3.3 FLUORESCENT TUBES INVENTORY

Table 8: Shows the amount of spent fluorescent tubes that was generated and crushed during the period under review

Month	Generated	Crushed
Jan-23	0	0
Feb-23	0	0
Mar-23	0	0
Apr-23	0	0
May-23	4	4
Jun-23	4	4
TOTAL	8	

Note: Unit of measure is each.

3.4 SCRAP LEAD INVENTORY

No scrap lead was generated nor stored during the period under review

