

## FOLLOW UP TO COP-2

### NIGERIA'S SUBMISSION ON MERCURY WASTE

1. Current practices of managing overburden, waste rock and tailings from mining other than primary mercury mining (e.g., laws, regulations and guidelines) and various approaches to thresholds for special care/handling, if any

Relevant Regulation: **Nigerian Minerals and Mining Regulations 2011, page 94, section 124-127**

#### **124. Deposit of Tailings**

(1) An application to deposit tailings shall be in **Form 18 in schedule 3**.

(2) A permit to deposit tailings shall be in **Form 19 in schedule 3** and shall specify the maximum amount of tailing which may be deposited in a natural watercourse by the holder of the permit.

#### **125. Disposal of Tailings and Dumps**

(1) Every title holder or mine operator shall:

- (a) provide an effective management system for his tailings throughout the period of operation;
- (b) make adequate arrangements to protect the general public, particularly the host community from the risks associated with tailings storage;
- (c) ensure that tailings are properly treated before they are discharged into the watercourse;
- (d) ensure proper treatment of mine waste before final disposal to prevent air and water pollution and contamination;
- (e) provide adequate measures to minimize the effect of air pollution.

#### **126. Procedure Before Dumping**

(1) A title holder or mine operator shall at least 30 days before commencement of any dumping operations notify and obtain the approval of the Ministry through Mines Inspectorate Department in writing.

(2) The notice referred to in sub-regulation (1) of these Regulations shall:

- (a) specify the material to be dumped;
- (b) give a description of the site;
- (c) state whether the dump shall be a classified dump or not;
- (d) state the manner in which the dumping operations are to be carried out;
- (e) explain the safety precautions to be taken to avoid polluting the environment and how the pollution to the environment shall be monitored and minimized.

(3) It is prohibited for a mine operator to dump any material which is wholly or partly in solution or suspension, or any solid material which may turn into a solution or suspension, over an area vertically above any mine workings, whether abandoned or not, or is within a horizontal distance of 100 meters from the line of break from which the mine workings intersects the surface.

#### **127. Drainage of Dumps**

A title holder or mine operator shall:

- (a) ensure that a dump is properly drained;
- (b) avoid carrying out any dumping operations that may cause accumulation of water in, under or near a dump, making the dump insecure or dangerous;
- (c) ensure that the drainage from any dumping operation shall not enter any mine opening or subsiding ground over any mine workings, whether abandoned or not.

#### **128. Intention to Abandon or Cease Production**

(1) The holder of a Mining Lease, Small Scale Mining Lease and Quarry Lease intending to abandon or permanently cease production shall serve on the Mines Inspectorate Department, Mining Cadastre Office and Mines Environmental Compliance Department, a notice in **Form 20 in schedule 3**, 3 months before the intended abandonment.

(2) The notice shall be accompanied by a report stating the details and reason or reasons for the abandonment.

2. Sampling and analysis methods that may be useful for verifying Hazardous waste (especially mercury) thresholds.

### **MERCURY IN SOIL**

Method: **Graphite furnace Atomic Absorption Spectrometry**

### **MERCURY IN WASTEWATER**

Method: **Cold Vapor Atomic Absorption Spectrometry (CVAAS) or Cold Vapor Atomic Fluorescence Spectrometry (CVAFS).**

Apparatus: **Atomic Absorption Spectrophotometer (AAS), Air pump, Flow meter, lamp, digestion Flask.**

Reagent: **Magnesium perchlorate, Mercury Absorbing Media, Sodium Chloride- Hydroxylamine sulfate Solution.**

**Stannous Sulfate solution, Mercury Sulfate solution and Mercury Standard.**

Calculation =  $\mu\text{g Hg/L} = W \times (1000/V)$

Where; W=  $\mu\text{g Hg in Specimen}$                       V= **ml of specimen.**

### **MERCURY IN FOOD**

Method: **Flameless cold vapor Atomic Absorption spectrometry**

Apparatus: **AAS (flameless), Diaphragm pump, water condenser, Gas Inlet Adapter, Digestion Flask**

Reagent: **Reducing Solution, Diluting Solution, Magnesium Perchlorate, Mercury Standard,**

**Working solution: dilute 1ml stock to 1l with 0.5M H<sub>2</sub>SO<sub>4</sub>. Freshly prepared .**

Concentration Hg( $\mu\text{g/kg}$ ) =  $\frac{\mu\text{g Hg}}{\text{g test portion}}$

### **PARTICULATE MERCURY IN AIR**

**Matrix to be used is wipe or Bulk Air**

**Sampling (Air Sample) – Mixed Cellulose Ester (MCE) Filters and a calibrated personal sampling pump**

**Collected medium is digested using nitric and sulphuric acids, potassium permanganate and hydroxylamine hydrochloride are added.**

**The mercury in it is analysed using Cold vapour- AAS after the Mercury in the has been reduced using stannous chloride.**