

HJ

INDUSTRY STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

HJ 943-2018

**Technical specification for pollution control of cyanide leaching
residue in gold industry
(English Translation)**

Issued on: March 1, 2018

Implemented on: March 1, 2018

Issued by: Ministry of Ecology and Environment

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1 Scope of application

This standard specifies the storage and transportation of cyanide residues produced during the cyanidation of gold ore, cyanidation of gold concentrate, and cyanide heap leaching in the gold industry.

Pollution control and monitoring system requirements in the process of transportation, decyanation treatment, utilization and disposal.

This standard applies to the pollution control of cyanide residues in the gold industry during storage, transportation, decyanation treatment, utilization and disposal.

And environmental impact assessment, environmental protection facility design, completed environmental protection acceptance, sewage discharge of projects related to cyanide residue in the gold industry License management, cleaner production audit, etc.

In the gold industry, the cyanidation of gold ore, cyanidation of gold concentrate, and cyanidation heap leaching process produced wastewater treatment sludge, its storage, transportation, the technical requirements for pollution control in the process of decyanation treatment, utilization and disposal shall be implemented in accordance with this standard.

2 Normative references

The content of this standard refers to the clauses in the following documents. For undated reference documents, their valid versions are applicable to this standard.

GB 3838 Surface Water Environmental Quality Standard GB 8978 Integrated Wastewater Discharge Standard GB 16297 Comprehensive Emission Standard of Air Pollutants GB 18598 Pollution Control Standard for Hazardous Waste Landfill GB 18599 Pollution Control Standard for General Industrial Solid Waste Storage and Disposal Site GB 30485 Cement Kiln Co-processing Solid Waste Pollution Control Standard GB/T 14848 Groundwater Quality Standard GBZ 2.1 Occupational Exposure Limits for Hazardous Factors in the Workplace Part 1: Chemical Hazardous Factors HJ 484 Water quality-Determination of cyanide volumetric method and spectrophotometric method HJ 651 Technical Specifications for Mine Ecological Environment Protection and Restoration (Trial) HJ 662 Cement Kiln Co-processing Solid Waste Environmental Protection Technical Specification HJ 740 Technical Guidelines for Environmental Risk Assessment of Tailings Pond (Trial) HJ 745 Determination of soil cyanide and total cyanide spectrophotometric method HJ 819 General Principles of Technical Guidelines for Self-monitoring of Pollutant Discharge Units HJ/T 299 Solid waste leaching toxicity leaching method sulfuric acid nitric acid method CJJ 113 Engineering Technical Code for Seepage Control System of Sanitary Landfill Site of Domestic Waste CJ/T 234 High-density polyethylene geomembrane for landfill BB/T 0037 PVC flame retardant tarpaulin and tarp coated on both sides "Guidelines for the Preparation of Environmental Emergency Response Plans for Tailings Ponds" (Huanban [2015] No. 48)

3 Terms and definitions

Cyanide leaching residue Solid waste produced after cyanidation leaching and solid-liquid separation of gold-containing materials, including gold ore cyanide tailings and gold concentrate cyanide Tailings, heap leaching cyanide tailings.

Gold ores cyaniding tailings Use unsorted gold ore or tailings of sorted gold ore as raw materials, after crushing, grinding and pretreatment, use Cyanide leaching the cyanide residue after gold extraction.

Gold concentrates cyaniding tailings the gold ore after sorting operation is used as raw material, after regrinding and pretreatment, cyanide leaching is used to extract the cyanide residue after gold extraction.

Heap-leaching tailings Using gold ore as raw material, after crushing, cyanide is used to infiltrate the cyanide residue after gold extraction.

Cyanide-containing tailings pulp the solid-liquid mixture of gold ore and gold concentrate after cyanidation leaching to extract gold and other valuable elements.

Decyanation treatment the process of removing cyanide from cyanide residue and cyanide tailing slurry by physical, chemical, biological and other methods.

Cyanide residue backfilling After the cyanide residue is decyanided, it is filled into the goaf or backfilled into the open pit, including underground filling and open air Backfill.

Backfilling bleeding water when the backfill is transported to the backfill site, the liquid is precipitated when the backfill is formed by sedimentation or solidification.

Leaching

The activity of spray cleaning and decyanation treatment on the cyanide tailings of heap leaching to reduce the concentration of cyanide.

3.10

Heap-leaching tailings transfer in order to continue to use the heap leaching site, the heap leaching cyanide tailings should be leached after reaching a certain standard, and then the heap leaching cyanidation tailings should be removed.

Disposal activities to a site that meets the requirements of this standard.

3.11

Enhanced natural degradation After solid-liquid separation, the cyanide tailing slurry reaches a specific moisture content and cyanide content.

Intensify degradation under natural conditions to reduce the content of cyanide.

3.12

New disposal site for cyanide leaching residue from the date of implementation of this standard, the newly built, rebuilt and expanded cyanide residue disposal sites for which the environmental impact assessment documents have been approved, including Tailings pond and heap leaching site (including the site for disposing of cyanide tailings after dumping).

4 General technical requirements

4.1

The selection of cyanide residue utilization and disposal technology should consider the properties of gold ore and the characteristics of the production process, and the utilization and disposal process should meet the requirements National and local environmental protection requirements.

4.2

The cyanide tailings of gold ore should be backfilled first. If the conditions for backfilling are not available, they should be disposed of in accordance with the requirements of this standard; heap leaching cyanide Chemical tailings should be preferentially disposed of in

situ; cyanide tailings of gold concentrates should be used preferentially. If the conditions for utilization are not available, they should be treated in accordance with this standard.

Disposal is required.

4.3

The environmental management account records of cyanide residue utilization and disposal enterprises shall comply with relevant national regulations, and the basic information of the facilities shall be recorded separately.

Daily operation information and pollution control facilities Operation and maintenance status.

4.4

Prior to the utilization and disposal of cyanide residues, suitable technologies should be selected for decyanation treatment according to the utilization and disposal methods. The use and disposal of different cyanide residues refer to Table 1 for the selection of decyanation treatment technology for disposal methods. The decyanation treatment workshop should adopt cement hardening and other anti-corrosion and anti-seepage (leakage) Measures to set up anti-seepage (leakage) accident pools. The effective volume of the accident pool shall meet the requirements of relevant design codes. Produced in the process of decyanation treatment Raw wastewater should be recycled first.

And to ensure that the entire transportation process is covered to avoid dust and rainwater. Transport vehicles should enter the body before leaving the cyanide residue site After cleaning, the waste water should be collected and treated in a standardized manner;

b) When using PVC flame-retardant waterproof cloth and tarpaulin, it should meet the quality requirements of BB/T 0037;

c) The loaded cyanide residue should be 100 mm lower than the body of the transport vehicle;

d) The dust and air cyanide concentration in the cyanide slag loading, unloading and transshipment work site meet the requirements of GBZ 2.1.It is forbidden to rain.

Stop loading and unloading in the open air;

e) When transporting cyanide residues, enterprises should choose appropriate transportation routes and avoid sensitive points such as water sources, scenic spots and historical sites. Unable to Avoided, bridges with rainwater collection systems should be selected when crossing water sources.

5.4 When transporting cyanide residue in the factory through villages and municipal roads, the relevant requirements in Article 5.3 shall be followed.

6 Technical requirements for pollution control in the disposal of cyanide residue tailings