An Introduction to the International Cyanide Code[1]

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Abstract

The mining industry responded to the public's concerns about the use of cyanide by developing the International Cyanide Code to allow companies to demonstrate their commitment to safe, responsible use of cyanide. The Code was created by a multi-stakeholder process that included the participation of industry, labor, government, and non-governmental organizations. Since its inception less than 10 years ago, 20 gold mining companies, representing 100 gold mines in 27 countries, plus 12 cyanide producers and 16 cyanide transporters have become Signatory companies.

How does the Code help companies demonstrate environmental compliance? Signatory companies agree to comply with Code principles and demonstrate compliance through third-party, independent audits with results published on a public website administered by the International Cyanide Management Institute (ICMI). The ICMI is also responsible for maintenance and administration of the Code. Nine principles related to cyanide handling and usage are part of the Code. The principles are production, transportation, handling and storage, operations, decommissioning, worker safety, emergency response, training, and communication. The ICMI has published standards of practice and guidance for each of the nine principles. Each Signatory company may comply with the principles according to company-specific methods, but the company must show that its methods achieve the performance goals associated with the principles. Audits are conducted prior to certification of a company's mine or operations, and subsequently a minimum of once every three years.

Companies that desire to show that their operations are environmentally responsible use Code certification as a demonstration to stockholders, financial institutions, and the public. Benefits include lower risk operations, easier financial funding, and better community relations. This paper provides an introduction to the Code.

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Resumen

La industria minera respondió a las preocupaciones del público sobre el uso de cianuro desarrollando el Código Internacional para el Manejo del Cianuro permitiendo así a las empresas poder demostrar su compromiso con la seguridad y el uso responsable del cianuro. El Código fue creado por un proceso de varias partes interesadas que contó con la participación de la industria, la mano de obra, el gobierno y las organizaciones no gubernamentales. Desde su creación, hace menos de 10 años, las empresas firmantes han sido 20 compañías mineras del oro, que representan las 100 minas de oro en 27 países, además de 12 productores y 16 transportistas de cianuro.

¿Cómo funciona el Código para ayudar a las empresas a demostrar el cumplimiento ambiental? Las empresas firmantes se comprometen a cumplir con los principios del Código, y demostrar el cumplimiento a través de terceros, auditorías independientes con resultados publicados en un sitio web público administrado por el Instituto Internacional para el Manejo del Cianuro (ICMI abreviado en inglés). El ICMI es también responsable de mantenimiento y administración del Código. Nueve principios relativos a la manipulación y el uso de cianuro son parte del Código. Los principios son la producción, el transporte, el manejo y almacenamiento, las operaciones de desmantelamiento, la seguridad de los trabajadores, la respuesta ante una emergencia, el entrenamiento y la comunicación. El ICMI ha publicado las normas de práctica y orientación para cada uno de los nueve principios. Cada empresa firmante puede cumplir con los principios de acuerdo con los métodos específicos de las empresas, pero la empresa debe demostrar que sus métodos alcanzan los objetivos relacionados con esos principios. Las auditorías se llevan a cabo antes de la certificación de la mina o de las operaciones, y posteriormente, por lo menos una vez cada tres años.

Las empresas usan el Código para demostrar a los accionistas, a las instituciones financieras y al público, que sus operaciones son responsables con el medio ambiente. Los beneficios incluyen menor riesgo en las operaciones técnicas, financiación más fácil y mejores relaciones con la comunidad. Este trabajo técnico sirve de introducción al Código.

Introduction

In response to problems associated with the use of cyanide in mining, users of cyanide developed a framework to both manage risk, and to promote social and environmental responsibility and economic development. Public concern about the use of cyanide reached a new level in January 2000, when the tailings dam at Baia Mare Aurul gold mine in northwestern Romania failed, releasing 100,000 cubic meters of tailings with residual cyanide into the Lapus and Somes tributaries of the Tisza River in Hungary.

Press agencies covered the story, which focused on flow from the Tisza River to the Danube River, which flows through Serbia, Bulgaria and Romania. The spill was called everything from “an incident” to “catrastrophe”, depending on the viewpoint of the individual. The Baia Mare Aurul tailings dam failure was not the first or largest accident, but the international spotlight was on the gold mining industry.

To address public concerns, industry responded with a multi-stakeholder process set up under the United Nations Environmental Program with the purpose of finding a way to avoid similar incidents in the future. The participants included representatives from government, mining companies and non-governmental organizations. In 2005, 14 companies became the first Signatories to the "International Cyanide Management Code for the Manufacture, Transport and Use of Cyanide in the Production of Gold" (Code), which establishes voluntary standards for the manufacture, transportation and use of cyanide. The development of this Code focused exclusively on the safe management of cyanide and cyanidation mill tailings and leach solutions specifically in gold mining, but could be used as guidance for other types of operations that utilize cyanide such as metal cleaning, electroplating, and base mine mining flotation circuits. The Code promotes:

- Responsible management of cyanide used in gold mining
- Enhance the protection of human health, and
- Reduce the potential for environmental impacts.

The structure of the Code, its objectives and performance goals, current participants, and company perspectives on the Code benefits are described below.

Organization and Administration

The International Cyanide Management Institute (ICMI) administers the Code, manages the certification process, and provides cyanide-related information. The Institute is composed of a Board and Executive Committee, of which the Executive Committee members may also be Board members. There are a maximum of nine Board members. The Board currently consists of seven members from across the globe. Each member serves as individuals rather than as representatives of particular interest groups. ICMI has no employees. Administrative and technical functions are carried out through consulting agreements. Information about the Institute, plus the Code, is on its website (www.cyanidecode.org), which the ICMI uses to disseminate information. The website includes downloadable copies of the Code and an Auditor Guide in Spanish.

Standards of Practice

The objective of the Code is to “improve the management of cyanide used in gold mining and assist in the protection of human health and the reduction of environmental impacts”. The Institute has developed a set of nine principles related to cyanide handling and use:

Principle 1	Production
Principle 2	Transportation
Principle 3	Handling and Storage
Principle 4	Operations
Principle 5	Decommissioning
Principle 6	Worker Safety
Principle 7	Emergency Response
Principle 8	Training
Principle 9	Dialogue

Guidance is provided as a set of performance goals and objectives for each principle, written as “Standards of Practice” and suggested guidelines. Each Signatory company may comply with the principle according to company-specific methods, but the company must show that its methods achieve the performance goals. The demonstration of achieving the performance goals is done during an audit.

Signatory Companies

A “Signatory company” means that the company has adopted the Code and committed to bring its designated gold mining operations into compliance with the Code within three years of becoming a Signatory. As of May 1, 2009, there are 20 gold mining companies, 12 cyanide producers and 16 cyanide transporters that have become Signatory companies. This represents 100 gold mines in 27 countries that are either certified or designated for certification (Figure 1). More than 70 of these mines are owned by just 7 multi-national mining companies. The names of the Signatory companies are identified on the Institute website. Companies may designate which of their operations will be certified, and a list of the company operations and which are slated for certification is maintained on the website.

Figure 1: Code signatory operations designated for certification

Per Mr. Norm Greenwald, Vice President of ICMI, "*The Code's growth over the last three and one half years demonstrates the industry's continued and expanding support for implementation of best management practices in a transparent manner*". The number of signatory gold mines, cyanide producers and cyanide transporters starting with the first group of Signatories announced in November 2005 to May 2009 is summarized in Table 1.

Table 1: Code Signatory Companies (2005-2009)

As of:	Gold Mines	Cyanide Producers	Cyanide Transporters	Total	% Increase
November 3, 2005	8	5	1	14	-
December 31, 2006	13	8	5	26	86
December 31, 2007	14	8	8	30	15
December 31, 2008	19	12	12	43	43
May 12, 2009	20	12	16	48	12

At present, there are three gold mines in Mexico listed under the Signatory Companies: Goldcorp's El Sauzal and Los Filos mines, and Minera Penmont's La Herradura, which is a joint venture between Newmont Gold and Peñoles. Only El Sauzal Gold Mine has been audited thus far, and it has been certified in full compliance with the Code. Per Dr. Rodolfo Espinosa, Technical Manager of Metallurgical Plants, Peñoles, La Herradura Mine is scheduled to be certified by the end of 2009. The parent company (Fresnillo plc) plans to certify La Cienega Mine after La Herradura is certified. Their exploration project Soledad-Dipolos is scheduled to be certified when the mine is constructed.

Independent Audits

Companies that become Signatories to the Code must have their operations audited to demonstrate their compliance with the Code. Those operations that meet the Code requirements are certified and allowed use of a unique trademark symbol.

Certified operations are audited a minimum of every three years to maintain their certification under the Code. Audits are conducted by an independent company that must demonstrate a minimum level of expertise and experience, as well as show that there is no conflict of interest with the audited company. The lead auditor must be certified as a professional environmental, health or safety auditor by a self-regulating professional organization. Examples of approved organizations are the Board of Environmental, Health and Safety Auditor Certifications and the National Registry of Environmental Professionals, which are both based in the United States. Results of the audits are made public on the ICMI website, such as shown below in Table 2 for Goldcorp's Mexican operations.

Table 2: Goldcorp Inc. Audit Results (Mexico Operations)

Mine Name	Operating Company	Operation Location	To Be Certified?	Certification Date	Audit documents
El Sauzal	Minas De La Alta Pimeria	Los Mochis	Yes	March 27, 2008	Summary Audit Report Auditor Credential Form
Los Filos	Desarrollos Mineros San Luis S.A. de C.V.	Guerrero State	Yes	None	None
Nukay	Compañía Minera Nukay	Guerrero State	No	Not Applicable	Not Applicable

Costs

Initially, the Code was developed using money donated by gold mining companies and cyanide producers. Currently, the organization charges an annual membership fee that is based on the business type. For example, cyanide producers pay $5,000USD; cyanide transporters pay $500USD; and gold mining companies pay $0.028USD/ounce of gold produced using cyanide. The mining company fee is based on a percentage of production from joint ventures and a minimun of $1,000USD annually.

The cost to the company for compliance with the code is based on individual conditions. For an operating mine, there may be costs associated with increased reporting, changes in mining practices, fee for an external audit, and personnel time. Per Dr. Rodolfo Espinosa, the process of certification has resulted in significant costs for La Herradura Mine. The Code required evidence of compliance so practices became more detailed and written procedures were updated. Equipment inspections were increased. Other operational impacts were recalculations to show 110% tank capacity and to prove tank volume. Channels were added for spill controls along cyanide lines. These measures also represent long-term cost savings related to potential future spills or leakage. Compliance with the Code has already eased financial funding.

Per Mr. Norm Greenwald, ICMI has funded a study to measure the cost impact of the Code on cyanide management practices, as well as the resulting benefits to those companies. The study is being conducted by RMDSTEM, an Australian consulting company. RMDSTEM has developed survey forms for gold mines and cyanide transporters with questions focused on the changes to their cyanide management practices that were necessary to achieve full certification under the Code. The forms have been sent to 36 certified gold mines and transporters, and the operations have been asked to provide data regarding the cost of these improvements as well as the actual or perceived benefits of certification. RMDSTEM will evaluate the responses with the intent of preparing general conclusions regarding the types of improvements that

were necessary and their costs, as well as the benefits of Code certification. Findings will be summarized in a report.

Future Work

One of the goals of the Institute is to encourage adoption and support of the Code amongst governments, non-governmental organizations (NGOs), financial institutions and others. In approximately the past twelve months, ICMI has visited with gold mining companies in Australia and Canada to inform them about the Code and enlist them as signatories. ICMI held training sessions on Code implementation and auditing in Toronto, Sao Paulo and Beijing, and participated in a workshop in Perth, Australia. ICMI President Paul Bateman recently met with representatives of the European Union and the European Bank for Reconstruction and Development, as well as the Bulgarian government, to discuss how the Code can be used to improve cyanide management in the gold industry.

Per Mr. Norm Greenwald, ICMI plans for the remainder of 2009 include training sessions in Accra, Ghana and Lima, Peru, as well as meetings with African and South American gold mining companies that are not current signatories to promote their adoption of the Code. ICMI also plans to return to China later this year to continue efforts to educate potential signatory companies on the Code and its benefits.

Concluding Remarks

Fewer than 10 years ago ICMI created a system that demonstrates to the public a company's commitment to environmental standards. The availability of audit results on the ICMI website achieves a level of transparency desired by the public. Audit results show which operations have demonstrated best management practices associated with cyanide management. Though certification by ICMI impacts a company's operating budget, corporate goals and investor demands for sustainability and environmental responsibility will make ICMI certification common practice in the future.

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