

**United Nations Environment Programme  
(UNEP)**

**with the assistance of**

**International Council on Metals  
And the Environment  
(ICME)**

**A Workshop on  
Industry Codes of Practice:  
Cyanide Management**

**REPORT**

**25-26 May 2000  
Ecole des Mines  
Paris, France**

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### **Background Issue Papers**

(The background issue papers are available at the following Mineral Resources Forum website:  
<http://www.natural-resources.org/environment/cyanide/>)

- a. H. Brehaut "Regulations & Codes Discussion Paper"
- b. F. Almond "Industry Codes of Practice for Cyanide Management"
- c. T. Mudder "Global Perspective of Cyanide"
- d. J. McDonough "Considerations for an Effective Emergency Preparedness System"
- e. F. Balkau "Code Framework, Implementation and Verification"

## EXECUTIVE SUMMARY

Two incidents early in 2000 concerning metals mines in Romania have dramatically increased public consciousness of the environmental and safety hazards of the mining industry. In January, the accidental release of large amounts of cyanide effluent from the Aurul mine in Romania resulted in major media exposure of the resulting river pollution. In March, a second accident at another nearby mine released heavy metal-containing effluent and sludge into the same river system.

To address public concern about cyanide, a two-day multi-stakeholder Workshop was held in May to consider development of a voluntary industry Code of Practice for the use of cyanide in mining. The Workshop succeeded in:

- identifying issues and principles that could be included in a draft industry Code of Practice and related Management System Guidelines including its promotion, acceptance, implementation, verification and reporting;
- establishing a Reference Group comprising initially those attending this meeting who, along with a Steering Group will recommend task forces and a timetable to develop the specifics of the Code and Management Systems in priority areas, for consideration by a larger multi-stakeholder group within a year; and
- developing a mechanism for the implementation of the Code that will deliver significantly improved performance in cyanide management in the mining industry that is meaningful, credible and publicly visible.

Some 40 people, representatives of key stakeholder groups - selected major mining companies, the International Council on Metals and the Environment, The Gold Institute, the World Gold Council, various governments, suppliers of cyanide, the United Nations, the European Commission, the OECD, the World Bank, NGO's, experts and consultants - presented their concerns with respect to cyanide management. They discussed elements of a Code of Practice on Cyanide Management and offered recommendations.

At the end of the Workshop, there was consensus on the need for an Industry Voluntary Code of Practice for Cyanide Management in Gold Mining. The Chair summarized the discussion indicating that both UNEP and ICME are ready to help in the promotion of a Code of Practice for Cyanide Management, but it is first and foremost an industry code. UNEP and ICME might be regarded as the "hub of the wheel" getting things started but the gold-mining industry should expect to take up the reins. There is a need to identify deliverables. To deliver them it will be important to balance stakeholder and regional views. Finally, the Code of Practice will stand or fall largely on whether it is backed and applied by the gold-mining industry, and its wide public acceptance.

The meeting ended with the following Information Release being accepted.



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## **Information Release**

### **UNEP/ICME Workshop Cyanide Management in Mining**

In Paris, on 25-26 May 2000, the United Nations Environment Programme (UNEP) and the International Council on Metals and the Environment (ICME) convened an international workshop to consider developing a Code of Practice for the use of cyanide in the gold mining industry.

On 30 January 2000, an accident involving cyanide occurred in Baia Mare, Romania, focussing public attention on the risks associated with gold mining. Although the immediate consequences of the accident have since been dealt with, this did not prevent the resurgence of considerable public concern as well as concern in the mining industry itself. While this type of accident remains an infrequent occurrence, the actual and potential consequences of cyanide can be very harmful.

The industry has recognised this and has decided, for its part, to support an initiative to further improve management systems.

In all countries where mining operations represent a substantial industry, there are government regulations relating to mine safety. In addition, many major mining companies have their own internal standards guaranteeing the security of operations. The fact remains however, that at the present time, there is no one single international Code specifically for the use of cyanide in gold mining.

The purpose of this workshop was to initiate the process of drawing up such a Code and the management system which follows from it.

This workshop, held at the École des Mines, brought together 40 delegates representing selected major mining companies and industry associations, the Gold Institute, the World Gold Council, various governments, suppliers of cyanide, the United Nations, the European Commission, the OECD, the World Bank, NGO's, experts and consultants.

The workshop confirmed the importance of a Code of Practice for the industry and established a procedure for the development of this Code. The delegates :

- identified the issues and principles that could be included in an industry Code of Practice and management system guidelines;
- identified the importance of the promotion, acceptance, implementation, verification and reporting in relation to the Code;
- acknowledged that both large and small gold mining companies will have to be brought into the process; and
- agreed that a Steering Committee be established to provide oversight and guidance, and to set a timetable to develop a draft code based on a process of multistakeholder consultation.

The overall long-term objectives of the Code are to drive improved environmental performance in mining through high standards of technology, management and control and to provide the public with the confidence that their expectations for the industry are being addressed.

At the close of the workshop, Mr Fritz Balkau, Chief of Production and Consumption from UNEP pointed out: "This meeting was a significant development in that it was the first time that industry met with other stakeholders to prepare a Code of Conduct. We expect that the implementation of such a Code will reduce the frequency of serious accidents involving the use of cyanide and produce a greater degree of environmental and public security from mining operations."

In agreeing with the above statement, Mr Gary Nash, Secretary General of ICME, was encouraged "by the commitment of the industry to this project and the constructive contributions of all stakeholders".

### **For more information**

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## **Introduction**

The Workshop was held at the Ecole des Mines, Paris, France, on 25-26 May 2000.

Mr. Fritz Balkau, Chief, Production and Consumption, Division of Technology, Industry and Economics, UNEP, opened the Workshop and welcomed the participants.

Mr. Gary Nash, Secretary-General of ICME also welcomed the participants and expressed ICME's hope for a successful meeting.

Dr. Jean du Mouza, Director of CESECO, on behalf of the Ecole Normale Supérieure des Mines de Paris, gave a very brief history of the Ecole. It was founded in 1783 and now has research as well as educational functions. He extended his institution's full support for the Workshop.

### **Meeting Objectives and Expected Outcomes**

Fritz Balkau outlined the cosponsors' aims and expectations with respect to the Workshop. He recalled that UNEP-DTIE was created in 1975 to give special attention to the incorporation of environmental considerations into industrial activities, including mining.

The long-term objectives of this initiative are to develop a voluntary industry Code of Practice that will:

- establish high standards of management practices and control relating to the use of cyanide by the gold-mining industry;
- drive improved performance in mines around the world;
- provide the public with the confidence that the adopted standards meet their expectations and are being applied.

The particular objectives of the present Workshop on the management of cyanide in the gold-mining industry were, through a multi-stakeholder process on a global basis, to:

- identify the issues and principles that could be included in a draft industry Code of Practice and management system guidelines;
- identify the issues and principles for its promotion, acceptance, implementation, verification, reporting and improvement;
- establish a co-ordinating committee, task forces and a timetable to work out the specifics of the Code and management systems in priority areas, for consideration by a larger multi-stakeholder group;
- develop a mechanism for the implementation of the Code that will deliver significantly improved performance in cyanide management in the mining industry that is meaningful, credible and publicly visible.

The expected outcomes of this initial meeting were for:

- issues and considerations to be identified relative to the management of cyanide in gold mining, including possible principles for the development of a Voluntary Industry Code of Practice, considerations for a Management System, verification and reporting and for
- multi-stakeholder Task Forces, stakeholder responsibilities and schedules to be defined for the development of draft principles and a draft Voluntary Industry Code of Practice and Management System for identified priority areas.

The development of the comprehensive Code and its approval will be pursued through a process of multi-stakeholder consultation.

Fritz Balkau reminded the participants not to dwell on particular cyanide-pollution past accidents, but to examine key causal factors, and the roles that should be played by the key stakeholders, mining companies, banks, NGOs, etc. He noted that this was the first time an international, multi-stakeholder group had met on an environmental issue to develop a Voluntary Industry Code of Practice and was the first of several such co-sponsored Workshops to follow-up on the recommendations of the UNEP/OCHA Baia Mare Assessment Mission Report.

Gary Nash briefly explained the reason for ICME's involvement in this field. ICME, founded in 1991, has a mandate to develop and promote sound environmental policy and practice in mining with a view to promoting sustainable development of the mining industry. This mandate requires consideration of community aspects. ICME operates only at the international level, especially with the UN system, the World Bank, etc. He noted that it had not been feasible to invite everyone who had expressed concern over the Workshop's subject matter.

The programme of the Workshop is given in Annex I; list of participants, in Annex II; and the list of acronyms used in this report, in Annex III.

### **Review of Current Regulations Governing the Use and Management of Cyanide in the Extraction of Gold**

The lead discussion paper was presented by Henry Brehaut, formerly a senior executive of Placer Dome and now of Global Sustainability Services, Inc. (Toronto).

Regulatory approaches vary considerably between jurisdictions depending mainly on local conditions and public concerns. No one jurisdiction has established a comprehensive set of laws and supporting regulations capable of addressing all the issues related to the use of cyanide in gold mining. However, good regulatory approaches to many issues exist for specific geographical or climatic areas (eg Wildlife Protection Guideline - Nevada Mining Association; Best Practice Guidelines - Avian Wildlife, Northern Territory, Australia; Management of Cyanide - ICME). Other guides have been published covering many technical issues, such as design and construction standards, risk assessment, water management, etc.

The Responsible Care Programme as a possible model has shown that enhanced performance is best accomplished through a combination of three fundamental factors: a robust and enforced regulatory framework that sets the floor for expected performance; a commitment by each organisation's leadership to go beyond the regulatory floor in order to improve its performance; and a sound management system to enable the organisation to live up to this commitment in a way that incorporates feedback from all affected parties.

The success factors identified in the Responsible Care Programme that may be transferable to other initiatives include: outside input in all phases; senior-level leadership and commitment of resources; an incremental process; well orchestrated peer pressure and disincentives; sharing of information and technical and management know-how; and strong internal and external accountability mechanisms.

ISO 14000 Environmental Management System (EMS) is another relevant approach.

It was concluded that the framework within which codes are developed is critical to the success of the programme. The following key factors were recommended as needing careful attention: stakeholder roles; code acceptance; company and industry commitments; performance standards; grandfathering/continuous improvement; and verification/reporting.

The Chair stressed the need to address the application of agreed measures. This would be different at different levels - overall, large-scale mining and small-scale mining, for example. Current technical experience is adequate, but application experience is not. There remains a great need for public education, information and communication. What counts is overall industry performance, since the public judges industry by its worst performers, not its best.

### **Cyanide Management as Seen by Key Stakeholders**

Representatives of key stakeholder groups then made several short presentations.

**Worldwide Fund for Nature (WWF):** There is a need to be aware that issues are as much a matter of perception as of fact. There is a general public perception (both deserved and undeserved) that mining industries are a major cause of environmental degradation, and NGO statements tend to be trusted more than those of industry. NGOs vary widely; some maintain an oppositional stance towards industry, whilst others are increasingly favouring constructive partnerships to develop solutions. Although cyanide is seen mainly as an acute toxin, it can have serious long term effects, particularly in the aquatic environment, where it can disturb large populations. There is still debate about chronic impacts, and a precautionary approach should be adopted whilst more scientific knowledge is amassed. There is a particular concern for abandoned sites which are poorly mapped and often unmanaged. WWF would like to see the prohibition of hazardous operations in the most highly protected ecological zones, or in areas of particular biodiversity value. In line with that, WWF would like to see thorough biodiversity surveys in all operational areas, and verifiable standards of environmental performance adopted by the industry. It believes that a system of stewardship based on sustainability standards, audit and verification, and market-based product differentiation (along the lines of the Forest Stewardship Council) would be worth serious investigation.

**International Council on Metals and the Environment (ICME):** The Council has organized a number of international meetings on related subjects: with IUCN, a meeting on

mining and biodiversity; with UNESCO, on the protection of World Heritage sites; with OECD on the assessment of metals in the environment; on the socio-economics of risk-management decisions and the Council is preparing a meeting on risk communication, to be held in Berlin in September 2000. ICME is also undertaking studies on: methodologies related to ecoefficiency and life cycle analysis; workplace exposure data for risk assessment; and financial surety instruments. Co- sponsoring with the World Bank, and in collaboration with SADAC and the South African Chamber of Mines, the Council is promoting an outreach program for southern African countries.

**International Commission on Large Dams (ICOLD):** The Committee provides guidelines on large dams, including tailings dams, to its members. ICOLD documentation covers tailings impoundments standards, among other subjects. National Committees provide their respective national viewpoints to ICOLD.

**OECD:** The Chemical Accidents Programme has helped OECD member countries (governments at all levels and industry) to better prevent, prepare for, and respond to chemical accidents. This help involves:

- development of guidance material;
- exchange of information and experience among OECD and non-OECD countries;
- analysis of specific issues.

The Programme is principally concerned with the management of fixed hazardous installations (i.e. those that handle, use or store potentially hazardous substances). It does not address problems of specific chemicals. Full information on the Programme is available at <http://www.oecd.org/ehs/accident.htm>.

The activities involve the 29 OECD member countries; Industry-CEFIC, CMA and OECD's BIAC; Labour-TUAC; NGO's-EEB,WWF; and other international organizations-UNEP, WHO, IMO, ILO, and UN/ECE.

The guidance and other relevant documentation produced can be seen at <http://www.oecd.org/ehs/ehsmono/index.htm>

The Programme promotes information sharing through collection and dissemination of chemical-accident case histories and statistics (with the EC); maintenance of an International Directory of Emergency Response Centres (with UNEP); and risk assessment of hazardous installations (see CARAT data base at <http://www.oecd.org/EHS/CARAT>).

The Programme also:

- prepares SMEs
- develops "safety performance indicators" to help industry and governments measure the extent to which specific actions improve safety
- undertakes comparisons of the cost of accidents with the cost of preventing them
- undertakes accident investigations
- evaluates environmental consequences of chemical accidents
- undertakes planning and training in its field.

The **European Commission (EC)** has recently adopted a policy document on sustainable development in the EU non-energy extractive industry, focusing on priority issues for competitiveness and environmental protection. The document also covers actions the Commission sees as necessary in order to review the legal framework following the accidents in Baia Mare, Romania, and Los Frailes, Spain: a) on the basis of an on-going study on waste management in the EU it will be assessed whether a specific directive on mining waste will be developed or whether existing directives on waste will be revised; b) the Seveso Directive on accident prevention will be reviewed in order to assess how mining activities could be covered by it.

With regard to horizontal legislative initiatives, the Commission has recently adopted a White Paper proposing a directive on environmental liability, which will be relevant for mining activities.

Moreover, the Commission is also assessing the scope and role of voluntary initiatives in the EU mining industry. The results of an on-going study on this issue will be discussed with Member States, industry and other stakeholders to this end.

The **Gold Institute** is an industry association; its members include many of the world's leading gold mining companies. The organisation's leadership is mainly drawn from the ranks of the industry's chief executives. The Institute considers that gold mining can flourish with the obligation to maintain environmental health and safety standards. The member companies of The Gold Institute adopted in 1995, a set of principles and standards designed to raise industry performance and lead the industry in its commitment to environmental, health, and safety excellence.

Sodium cyanide is the lixiviant of choice by the industry for extracting gold ore, because it is the safest, most flexible and economic leaching agent available to the industry today. However, research continues in an effort to find suitable alternatives. The Institute recently has been at work developing a cyanide stewardship program, as part of a broader mining stewardship program concept.

The industry recognises that for it to have continued access to resources it needs to establish higher levels of trust and credibility with stakeholders. An internationally recognised voluntary code of practice in the area of cyanide management would be an important contribution toward that goal.

**UN System:** The UN Dept of Economic and Social Affairs (UNDESA), the UN Conference on Trade and Development (UNCTAD) and the UN Economic Commission for Europe (UNECE) all have some interest in mining related matters.

The UNECE covers the whole of geographic Europe, Central Asia, and Israel. Canada and the US are also members of the Commission. UNECE promotes cooperation between its member states. In the field of environmental legislation, two regional conventions were drawn up under the auspices of the UNECE, and the UNECE secretariat carries out secretariat functions to these conventions. They are namely the Convention on Transboundary Impact of Industrial Accidents and the Convention on the Protection and Use of Transboundary Watercourses and International Lakes. The conventions set up strict regulations, including a requirement for each of the parties to help neighbouring countries

whenever an accident occurs. A third convention, which has not yet entered into force on Access to Information and Public Involvement in Decision-making is also relevant to the mining context.

A lack of coordination emerged in the Baia Mare accident. The transboundary impact of tailings dam failures is not explicitly mentioned in the industrial accident convention. However, tailings dams can be regarded as part of the industrial installation. There is a need to draw up an inventory of tailings dams. Some NGO's maintain such lists, but these are neither always coherent nor all-inclusive. Under the Watercourses Convention, a group of legal experts is now drafting an instrument to cover civil liability for the transboundary effects of industrial accidents.

**Homestake Mining Company:** The Company was founded in 1879 and operates on three continents. It has a long experience of cyanide management and is currently developing effective biotechnology to remove cyanide from tailings etc. Homestake has strong community commitment. It undertakes comprehensive public environmental reporting in the context of overall environmental stewardship.

**Degussa-Hüls:** Public perception of the cyanide issue is centered on who supplies the cyanide. The main suppliers are big chemical companies, which already have a Code of Practice in place and are signatories to Responsible Care. Degussa-Hüls, one global cyanide supplier, is particularly focussing on the storage of cyanide, its handling at the mine site, and its transport from the factory to the mine. The Corporation provides extensive training. However, it realises that guidelines alone are not sufficient to ensure environmental safety and protection; they must be meticulously applied. There is also a need to provide full information to mine operators and to the general public. Producers have an extensive responsibility for product stewardship. Degussa-Hüls refuses to supply cyanide to companies that do not comply with acceptable safety standards.

**United States Environmental Protection Agency (EPA):** The Agency is highly committed to the use of voluntary Codes of Practice. The US experience of cyanide handling has been both good and bad, and the Agency is stressing the need to establish much closer links between the financing of gold mining and related environmental protection, with a view to avoiding the development of Codes of Practice without the financial means to apply them. The relevant World Bank Code of Practice is used to assess investment in mining and to promote the integration of financing, mining and environmental protection.

**Ministry of Waters, Forests and Environment, Romania:** The January 30, 2000, Baia Mare accident was the biggest accident in Romania in the last thirty years. The cyanide plant for gold and silver recovery was built in 1960, but understanding of the impact of the waste water on the Ssar River, into which it was discharged, was very limited. Initially the cyanide-process wastewater was mixed with clean water in the tailings pond prior to discharge, but since 1970, the cyanide-process wastewater has been treated using sodium hypochlorite. The treated wastewater also contains heavy metals however, and they react with the hypochlorite and are discharged at concentrations well above permissible levels. In 1981, a three-pond treatment system was introduced allowing chemical treatment, microbiological treatment, and the use of aquatic flora to improve the quality of the discharge water and removing excess chlorine. A problem arose in 1989 with the reworking of tailings with a high precious-metal content. To deal with this problem, a joint Romanian-Australian

venture was started in 1999. The Baia Mare accident revealed a serious lack: of capability to handle the situation; of appropriate equipment; of tailings impoundment monitoring; and ineffective communication with local authorities. Romania is learning rapidly how to cope with such serious accidents.

The Chair summarised the topics that he believed had emerged from the discussion:

- the need for strong interrelation between cyanide use, tailings management and mining operations;
- extended producer responsibility with respect to cyanide;
- the possible use of existing intergovernmental processes and organizations to assist in implementation of various Codes of Practice;
- assessment of the risk from the involvement of non-cyanide managers in the development of cyanide safety procedures;
- the need to have both a regulatory framework and voluntary Codes of Practice;
- how to move the trailing edge of corporate performance up to that of the leading edge;
- define what leadership the high-performance mining companies might be expected to provide;
- the importance of communication to improve the accuracy of public perception of the problems; and
- clarification of the public's role in the formulation and implementation of Voluntary Codes of Practice.

### **Cyanide Management Systems ~~3~~4 Accidents and Lessons to be learned**

Terry Mudder, a mining-industry consultant, presented this discussion paper (see the Background Issue Paper) to start the discussion.

There is a general shortage of facts on the mining-environment relationship, and too much fear of what is unknown. While there may be public outcry over cyanide levels as high (or low) as 2 µg/l in drinking water, considerably higher levels are found in table and road salt (as anti-caking agent), in the form of an iron cyanide, but this fact is not often publicized.

Of the current 875 gold- and silver-mining operations, about 460 use cyanide (as sodium cyanide) to extract the metal. About 37% is used for conventional cyanidation, heap leaching about 15%, and other methods about 48%. Yet, this use constitutes only about 13% of the world production of cyanide. The bulk of cyanide is used in the production of nylon, plastics and pharmaceuticals.

With respect to the last 25 years, the major causes of cyanide releases to the environment from mining have been tailings-dam mishaps (76%); pipeline failures (18%) and transportation accidents (6%). However, in terms of types of mining, that for precious metals was responsible for only 43% of losses to the environment by accident. And of all mining related environmental incidents, cyanide was present in only 27% of them.

In gold mining incidents, the main causes were: tailings dam failures (43%); dam overtopping (29%); pipeline failures (14%) and transportation accidents (14%).

At present, there is no extraction method available that is superior to cyanidation. Therefore, much work needs to be done on the development of new, better and safer methods of metal extraction from ore. Australia is the leading exponent of the environmental management of cyanide.

Aquatic organisms are the most vulnerable since they are the most exposed having few options for avoidance of any cyanide source, and some species are very sensitive to low concentrations in the ambient water.

Regarding treatment, there are four levels of intervention:

- water management—this takes place in the environment, outdoors, and is largely governed by land use and the local climate
- chemical processes—there are plenty available to break cyanide down or render it harmless (the US is moving towards zero discharge from mining operations)
- biological processes—certain micro-organisms and aquatic flora can be used to fix or break down cyanide
- physical processes—these are mostly cyanide-recovery sorption methods aimed at removing cyanide from tailings ponds and other mining-process wastewater.

The development of a Code of Practice should involve: the public; the mining industry; regulatory agencies; non-governmental organizations; and science and engineering professionals.

In the subsequent discussion, several specific accidents were described involving poor engineering or causes other than cyanide although cyanide was blamed. It was pointed out that, whereas large-scale mining prefers to use cyanide for the extraction of gold and silver, small-scale mining prefers to use mercury, which can be a serious environmental and human health hazard. Some mining operations are still using chlorine for metal extraction, but this is environmentally worse than cyanide. Technical options therefore need to be studied carefully with respect to minimizing environmental impacts.

The Chair then presented an overview of what a sound Voluntary Industry Code of Practice for Cyanide Management might cover on the basis of the discussion. Specifically, there is a need for:

- safety in handling and treatment of cyanide;
- alternatives to cyanide;
- cyanide containment: handling, transport, with zero discharge as the long-term aim;
- security features need to be built into conception, design and operation of processing technology;
- contingency plans and emergency preparedness and response.

He then posed the question, for whom is the proposed Code of Practice?

- industry, in general, and mining, in particular
- chemical suppliers
- the general public (clear perception of the Code of Practice)
- regulatory agencies (practicability and performance).

The Chair then invited the five break-out groups to:

- look ahead (to solutions) rather than back to earlier accidents;
- prefer synthesis, though based on analysis;
- keep in mind the Code of Practice's clientele;
- assign responsibilities and functions to the entities involved in applying the Code;
- define needs for research and development and for better standards; and
- keep in mind their respective terms of reference.

### **Code of Practice Development ~~3~~ Break-out Groups**

Dr. Irwin Itzkovitch, Executive Vice President Environmental Stewardship, ICME Chaired the Break-out and the Plenary reporting Sessions.

Five groups were delineated:

Group 1	Chemical Stewardship
Group 2	Environmental Protection
Group 3	Emergency Response/Community Relations
Group 4	Process Design
Group 5	Code Framework

After a period of discussion, each group presented a preliminary report to the plenary for discussion and then reconvened to incorporate the broader results into their discussions. The Chair summarized the discussion indicating that both UNEP and ICME are ready to help in the promotion of a Code of Practice for cyanide management, but it is first and foremost a voluntary industry code. UNEP and ICME might be regarded as the "hub of the wheel" getting things started but the gold-mining industry should expect to take up the reins. There is a need to identify deliverables and, subsequently, to deliver them it will be important to balance stakeholder and regional views. Finally, the Code of Practice will stand or fall largely on whether it is backed and applied by the gold-mining industry, and the need for wide public acceptance.

### **Next Steps in the Development of A Code of Practice**

The mechanics of the formation of the Steering Committee were then discussed. Key individuals will consult with their respective constituencies. Each nominator will nominate two candidates to allow regional concerns to be taken into account. The World Gold Council will nominate four candidates to allow representation from both the large-scale and small-scale mining sector. Of those nominated, UNEP, with ICME will choose the best nominees for the Steering Committee. The number of Committee members would preferably be between six and ten but will be representative of the stakeholders. At a minimum large gold mining companies (1), medium gold mining companies (1), cyanide suppliers (1) UN agencies/OECD/World Bank (1), governments (1) and NGO's (1) would be represented.

Workshop participants will function in a consultative way to UNEP-ICME.

## **Final Statement of the Meeting**

At the end of the discussions, Mr. Fritz Balkau summarized the results of the two day discussions as follows:

1. There is a need for maximum stakeholder involvement as we go on. This Group has developed good synergy, and has a useful role to play as a Reference Group as ICME and UNEP develop the ongoing code development process.
2. The Reference Group may be enlarged to include other stakeholders who could not attend this meeting.
3. UNEP and ICME will propose a Steering Group and consult with this Reference Group before finalizing the Steering Group.
4. The industry associations here are invited to consult their membership to encourage broad support, and to channel comments through an appropriate lead association. They should also consider how to support the ongoing process of code development.
5. Due representation and dialogue needs to be ensured so as to include views of small operators and medium size companies that do not belong to major international associations. A mechanism for such input needs to be developed by the Steering Group.
6. On the issue of international guidelines or agreements, there is also a need to consider how to link with existing intergovernmental processes and Conventions so as to make best use of available mechanisms and avoid duplication. Existing Conventions may eventually provide a vehicle for improving various national government frameworks, and to provide effective use of voluntary codes.
7. A cyanide code needs to complement, in an effective way, other guidelines and codes on related issues such as tailings, mine management, etc, but should not try to reinvent those in the cyanide code itself (cyanide code needs to find its proper place in the system of other codes that already exist).
8. A future code needs to provide a mechanism to ensure improved operations of weaker performers, as well as providing a framework for good operators (bring up trailing edge as well as move leading edge forward).
9. UNEP and ICME will now concentrate on the next stage by proposing a process for code development that involves all stakeholders. The first step in this will be the composition of the Steering Group as mention in #3 above.
10. The report of this meeting will be prepared and distributed to all participants.

## Closure

Mr. Gary Nash, the Secretary-General of ICME, commented that the Workshop had been valuable. The participants had been constructive and he particularly welcomed the response of the mining industry to new, but urgent, environmental requirements. ICME would collaborate with UNEP in the follow-up. Mr. Nash warmly thanked UNEP-DTIE, and its staff members directly concerned, for organizing the Workshop and praised the stance UNEP had taken in the development of the Code of Practice.

Mr. Fritz Balkau recalled that UNEP's mission is to promote environmental action, not to regulate it. The Executive Director of UNEP, Mr Klaus Topfer in Nairobi, and the Director of UNEP DTIE in Paris, Mrs Jacqueline Aloisi de Larderel, were fully informed of this Workshop and are committed to support its follow-up.

## ANNEX I

### Programme of the Workshop

<b>24 May 2000</b>
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19:00 - 21:00 Welcoming cocktails and ice-breaker

<b>25 May 2000</b>
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09:00 - 09:20 Welcome, Review of Meeting Objectives and Expected Outcomes

09:20 - 09:30 Programme and Logistics

09:30 - 10:10 Review of Current Regulations Governing the Use and Management of Cyanide in the Extraction of Gold in Selected Countries and Existing Industry Codes Including the Advantages, Disadvantages, Limitations and Implications Each Has on the Other. The Review will establish the Limiting and Reinforcing Principles Including the Similarities and Differences Between Various Regulatory Constituencies. (Consultant Paper prepared and distributed prior to the Workshop)

10:10 - 10:30 Break

10:30 - 12:00 Overview of Key Issues of Cyanide Management as Seen by Different Stakeholder Groups

International NGO's - WWF  
OECD (Chemical Accidents Group)  
European Commission (DG Environment)  
Industry - The World Gold Council, The Gold Institute

Other stakeholders will be invited to add to the comments (3 minutes) to those given by the above (2-page hand-out prior to the Workshop)

- 12:00 - 12:30 Cyanide Management Systems, a Review of Accidents and Lessons to be Learned. (Consultant Paper distributed prior to the Workshop)
- 12:30 - 13:30 Lunch
- 13:30 - 14:00 Discussion of Areas of Critical Importance (Framework) for a Code of Practice
- 14:00 - 16:30 Break-out Group Sessions on Codes of Practice Development:

The primary question to be addressed by each Group is:

What are the priorities for, and component parts of, a Code of Practice and Management System for Cyanide Management that might be included as a guide to mining companies both large and small? Issue owners who are experts will be chosen for each of the Breakout Groups.

They will be tasked with preparing and circulating, ahead of time, a 1-page discussion piece on the issue and a 1-page preliminary sheet on possible components for their respective parts of the Code and Management System (point form). Each Breakout Group will have a designated facilitator who will lead the session.

Break-out Group 1: Chemical Stewardship: (Issue Owner - Degussa-Hüls)

Safety and management related to transportation, storage, workplace handling, and disposal

Break-out Group 2: Environmental Protection/Stewardship: (Issue Owner - WWF)

Wildlife, aquatic life, ground water and drinking water

Breakout Group 3: Emergency Response/Community Relations: (Issue Owner - Industry)

Technical response (cyanide containment, clean-up, engineering, impacts on environment and health-short and long term, monitoring, sampling and analysis)

Communications/public notification (community, employees, governments, ENGO's, media, financial community, shareholders), liability protection.

Remediation

Breakout Group 4: Process Design Considerations: (Issue Owner - Consultant)

Design criteria, water conservation, science of cyanide and its destruction; alternatives to cyanide; recycling; research and technological gaps.

Breakout Group 5: Code Framework, Implementation and Verification: (Issue Owner - UNEP)

amework, implementation, verification, transparency/reporting, promotion, and adaptation to the code by stakeholders, including governments, suppliers, large, medium and small metal- and gold-mining companies, and capacity building in stakeholder groups.

16:30 - 18:00 Preliminary Report of Break-out Group Sessions on Codes of Practice Development and Discussion

19:00 Cocktails and dinner

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09:00 - 10:00 Break-out Group Sessions on Codes of Practice Development to Incorporate Discussion and Finalize Their Reports to Plenary

10:00 - 10:30 Break

10:30 - 13:00 Final Plenary Reports and Discussion of Break-out Group Sessions on Framework and Codes of Practice Development

13:00 - 14:00 Lunch

14:00 - 15:30 Development of Draft Code of Practice and Next Steps -  
Priority topic areas and identification of others needing consideration  
Key responsibilities of stakeholder groups going forward  
Nomination of individual task forces and leaders  
Nomination of multi-stakeholder Co-ordinating Committee  
Agreement on milestones and schedule  
Date of next meeting

15:30 - 16:30 Break

16:30 - 16:45 Final Statement of the Workshop

16:45 - 17:00 Concluding Remarks: UNEP, ICME

## ANNEX II

### List of Participants

ORGANIZATION	ATTENDEE
<b>UN AGENCIES</b>	
UNEP	Fritz Balkau, Wanda Hoskin, Kathryn Tayles
UNCTAD / UNDSA	Beatrice Labonne
<b>EUROPEAN COMMISSION</b>	
DG Enterprise	Henrik Nielson
<b>NATIONAL GOVERNMENTS</b>	
Australia	Keith Croker
Australia – New South Wales	Kerry Brooks
USA EPA	Stephen Hoffman
France	Jack Testard
Romania	Cornel Florea Gabrian
Hungary	Laszlo Kozari
<b>INTERGOVERNMENTAL</b>	
OECD Chemical Accidents Group	Beatrice Grenier
<b>INDUSTRY</b>	
Barrick Gold (Canada)	John McDonough
Placer Dome (Canada)	Jim Robertson
Newmont Gold (USA)	David Baker
Normandy Mining (Australia)	John Den Dryver
Western Mining (Australia)	Tony O’Neil
Anglogold (South Africa)	Basie Maree
Rio Tinto (United Kingdom)	David Richards
Homestake (USA)	Harold Barnes
Gold Fields (South Africa)	Andries Leuschner

<b>CYANIDE SUPPLIERS</b>	
Degussa-Huls	Jurgen Loroesch
Dupont	Dewayne Mills
<b>NGO'S</b>	
World Wildlife Fund	Frank Almond
Mineral Policy Centre	Robert Moran
Sierra Club	Glen Miller
<b>FINANCIAL INSTITUTIONS</b>	
IFC	Steve Bailey
<b>ASSOCIATIONS</b>	
World Gold Council	John Willson
Gold Institute	Paul Bateman
Euromines	Jean-Sylvain Ibos-Auge
ICOLD (Tailings Dam Committee)	Stewart Cale
ICME	Gary Nash, Irwin Itzkovitch, Dave Barnes
<b>CONSULTANTS</b>	
Private	Henry Brehaut, Terry Mudder, Karen Hagelstein
FIDIC (Federation of Independent Consultants)	Annika Benckert
<b>Rapporteur</b>	Ray Griffith
<b>TOTAL</b>	<b>38</b>

## ANNEX III

### List of Acronyms

Acronym	Name	Affiliation
APELL	Awareness and Preparedness for Emergencies at Local Level	UNEP
BIAC	Business Industry Advisory Committee	OECD
CARAT	Chemical Accident Risk Assessment Thesaurus	OECD
CEFIC	Conseil européen des fédérations de l'industrie chimique [European Council of Chemical Industry Federations]	
CEO	Chief Executive Officer	
CESECO	Centre d'études supérieures pour l'exploitation des mines et carrières à ciel ouvert [Centre for Advanced Studies for the Exploitation of Open-cast Mines and Quarries]	Ecole des Mines de Paris, France
CIS	Confederation of Independent States	
CMA	Chemical Manufacturers Association	
DG	Directorate-General	EC
DMEWA	Department of Minerals and Energy of Western Australia	Australia
DSD	Department of Sustainable Development	United Nations
EC	Europe Commission	Europe Union
ECE	Economic Commission for Europe	United Nations
EEB	European Environment Bureau	
EMS	Environmental Management System	
ENGO	Environmental Non-governmental Organizations	
EPA	Environmental Protection Agency	Australia; USA
EU	European Union	
FAA	Federal Aviation Agency	USA
ICME	International Council on Metals and the Environment	
ICOLD	International Committee on Large Dams	
IFC	International Finance Corporation	
ILO	International Labour Organization	
IMO	International Maritime Organization	United Nations
ISO	International Organization for Standardization	
MIACC	Major Industrial Accidents Council of Canada	Canada
NGO	Non-governmental Organization	
NTA	Northern Territory of Australia	Australia
OCHA	Office for the Co-ordination of Humanitarian Affairs	UNEP
OECD	Organization for Economic Co-operation and Development	
TUAC	Trade Union Advisory Committee	OECD
UNCTAD	UN Conference on Trade and Development	United Nations
UNEP	United Nations Environment Programme	United Nations

UNEP-DTIE	UNEP Division of Technology, Industry and Economics	UNEP
UNESCO	United Nations Educational, Scientific and Cultural Organization	
WAD	Weak-acid-dissociable [cyanide]	
WB	World Bank	United Nations
WHO	World Health Organization	United Nations
WWF	Worldwide Fund for Nature	