



**European Commission**

**DG Environment**

**Establishment of guidelines for the inspection of  
mining waste facilities, inventory and rehabilitation of  
abandoned facilities and review of the BREF document**

**No. 070307/2010/576108/ETU/C2**

**Annex 1**

**Workshops in Brussels and Lisbon**

**April 2012**

**Prepared by**

**DHI  
in cooperation with  
Cantab Consulting Ltd  
University of Tartu  
Mecsek-Öko  
Miskolc University  
and  
VTT**



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## **Workshop on the development of Guidelines on INSPECTIONS of mining waste facilities**

**Brussels, European Commission, Avenue de Beaulieu 5, on 30 June 2011 at 10:00**

### **Background:**

The European Commission, DG Environment, has retained DHI (Denmark) and its co-operation partners, Cantab Consulting Ltd (United Kingdom), University of Tartu (Estonia), Mecsek-Öko (Hungary), Miskolc University (Hungary) and VTT (Finland) to undertake the study "**Establishment of guidelines for the inspection of mining waste facilities, inventory and rehabilitation of abandoned facilities and analysis of the opportunity of reviewing of the reference document on the best available techniques (BREF)**", study contract no. 070307/2010/576108/ETU/C2. The study will take place during the period 9 November 2010 to 9 November 2011.

As part of the project two workshops will be arranged. This first workshop will focus primarily on inspections. The second workshop to be held in Portugal in September 2011 will mainly focus on rehabilitation of abandoned facilities. The opportunity of reviewing the BREF will be discussed during both workshops.

### **Objectives of this workshop:**

The purpose of the workshop is to draw from the knowledge of invited experts on inspection and to consult stakeholders at an early stage of the project outline and approach. The workshop also presents an opportunity to exchange views on the need to review the BREF document.

The workshop participants will receive an annotated first outline of the guideline on inspections prior to the workshop.

### **Programme:**

#### **10.00 – 10:30: Workshop starts**

- Michel Sponar from the EU Commission gives a short introduction to the workshop on INSPECTIONS.
- Ole Hjelmar: Brief information about the project, the initial approach (also touching on other parts of the project), the deadlines and the objectives of the workshop.

#### **10:30 – 11:30: Guideline on Inspections – first approach**

- Mike Cambridge: The objective of inspections and the main contents of the draft outline of the guideline on inspections.

**11:30 – 12:00: The regulatory framework of inspections (interaction with other regulation)**

Pol O'Seasain, Irish EPA: The integration of inspections under the MWD and IPPC.

**12:00 – 13:00: Discussion of the presentations and the outline document**

**13.00 - 14:00: Lunch**

**14:00 – 14:30: INSPECTIONS continued**

Continuation and conclusion of the discussion on the presentations from before lunch and the outline document.

**14:30 – 15:15: Inspections – Lessons learnt from recent accidents - can they help us to better achieve the goals of inspection? (Coffee during session)**

- Various failures – could they have been avoided? (Mike Cambridge/Nils Eriksson)

Discussion - In a context of limited public resources, how should inspections be performed in order to avoid accidents? What could be the role of external auditing by specialised companies? How to identify the main risks and organise inspections accordingly?

**15:15 – 16:15 Review of the BREF document**

- Short introduction by Nils Eriksson on the first suggestions gathered so far on the opportunity to review the BREF followed by open discussion/presentations by the participants.

**16:15 – 17:00: Conclusion**

- Summary of discussions on Inspection (Mike Cambridge)
- Summary of discussion on review of the BREF-document (Nils Eriksson)
- Closing comments and next steps – Michel Sponar/Ole Hjelmar

Feedback to the experts and stakeholders about what the project and the Commission found especially valuable from the workshop and possibly how it might affect the initial approach.

**17.00 The workshop ends**

*The workshop will take place in Brussels, at the Commission facilities at Avenue de Beaulieu 5 – meeting room 4/53 (4<sup>th</sup> floor). You will need an ID card or a passport in order to be let into the building. Further information will be sent out before the meeting.*

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## Workshop on the Development of Guidelines on Inspections of Mining Waste Facilities

Held in Brussels, European Commission, Avenue de Beaulieu 5, on 30th June 2011<sup>1</sup>

### Draft Minutes

#### Introduction

**Michel Sponar** from the EU Commission, DG ENV gave a short introduction to the workshop on inspections<sup>2</sup>. He briefly explained the context of this exercise – implementation of Article 22 (d) of the Directive – development of technical guidelines on inspection to be adopted in Comitology. The intention of the Commission is to develop in full transparency practical guidelines to support Member States and their competent authorities in planning, organising and achieving adapted inspection of the mining waste facilities. Stakeholder implication is essential and will be ensured during the whole process.

Tour de table

**Ole Hjelmar** from DHI (project team) gave brief information about the project, the initial approach (also touching on other parts of the project), the deadlines and the objectives of the workshop. He mentioned that so far only two Member States (UK and Ireland) have responded to the questionnaires sent to the TAC members.

#### Guideline on Inspections – first approach

**Mike Cambridge**, Cantab Consulting Ltd, (project team) presented the rationale and objective of inspections (Part 1).

Comments regarding Inspections during subsequent discussion: **Martin Brumby** agreed to the need for inspection by a competent person but questioned the need for him to be independent of the operator. **Patrice Piantone** asked: What is an independent inspector and who makes the choice? **Ferenc Madai** indicated that Kolontar was not considered by the HU authorities as under the EWD at the time of the failure, but the HU legislation has been adapted in the meantime. **Simon van Byl** indicated that inspection guidance only applies to Article 7 sites. **Miroslav Angelov** was concerned about who determines what the competence should be and who is sufficiently independent, and suggested that the only way to ensure this is for the Regulator to employ the inspecting engineer. **Johannes Drielsma** agreed with the principles of inspection by an independent competent engineer, but expressed concerns regarding their independence in less rigid legislatures.

#### The Irish experience with inspections

**Pol O'Seasnain**, Irish EPA presented the Irish experience concerning the integration of inspections of mine waste facilities under both the EWD and IPPC. This presentation agreed in general with the proposed approach of Mike Cambridge.

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<sup>1</sup> The list of participants is provided in Annex 1

<sup>2</sup> All presentations are available and on the DHI web site : <http://mwf-info.team.dk.dhigroup.com>, user name: TACMW and password: TAC. The presentations can be found under Shared Documents/Workshop on guidelines for inspection of mining waste facilities.

Comments during subsequent discussion: **Marja Liisa Räisänen** asked what role the characteristics of the waste plays on design, operation and inspection of MW facilities. The answer was that they all have different design. **Marja Liisa Räisänen** emphasised that the waste characteristics will have an impact on the design and operation of a facility and hence on the way inspections have to be planned and executed.

### **Guideline on Inspections – first approach (2)**

**Mike Cambridge** presented the outlines of inspection procedures (Part 2).

Comments during subsequent discussion: **Martin Brumby** suggested that the inspecting engineer should be accountable rather than independent. It was also mentioned that the relevant competent authority for inspections would be Health and Safety.

**Nils Erikson** (project team, DHI during the project) briefly introduced the Outline of the Guidance Document which had been prepared by the project team and distributed to the participants prior to the workshop.

Comments during subsequent discussion of the Outline and the previous presentations: **Pol O'Seasain** sought clarification of the requirements of an inspection plan. **Mike Cambridge** indicated that the inspection plan would in the first instance follow from the design and the permit and, post-operation, from the inspecting engineer's recommendations. **Simon van Byl** again indicated that this only applies to Article 7 sites. **Lars-Åke Lindahl** emphasised the need for extensive explanation of the scope and format of the daily inspection routines as they form the cornerstone of inspection guidance. **Michel Sponar** confirmed that formally speaking according to Article 17 of the Directive only facilities covered by a permit should be targeted. He reminded that the aim of this exercise is to ensure that inspections are as efficient as possible, knowing that the practical organization remains in the hands of the MS and their competent authorities and notably for what concerns the use of external independent expertise. **Charlotte Danvers** stated that the scope of such expert inspections is covered by the BREF. **Johannes Drielsma** requested clarification of the term "inspection" as, following translation, this may have a range of meanings in other languages. **Mike Cambridge** stated that the presentation carefully uses the terms "inspection", "monitoring" and "instrumentation" to cover the whole range of processes involved. **Georg Baethge** indicated that inspections by the operator should be excluded as these would be written in the permit. **Mike Cambridge** pointed out that the purpose of the document is to provide guidance to all parties involved in the inspection process. **Ann-Marie Fällman** was concerned that the inspection processes only appeared to relate to dams. **Mike Cambridge** confirmed that the inspection processes relate to all geotechnical, geochemical and other environmental aspects of a mine waste facility, as indicated in the presentation, and thus that environmental aspects are also part of the process.

**Lars-Åke Lindahl** indicated that the guidance must not give the impression that it is a detailed recipe for the inspection process. It is evident that inspections need to be undertaken only by qualified professionals with relevant experience. The document is not intended to provide guidance to unqualified inspectors. **Arthur Maurer** confirmed that Austria currently employs a similar approach to inspections as that presented. He also warned that a high frequency of inspections alone is no guarantee against accidents. **Marja Liisa Räisänen** remained concerned at the scope of the proposed inspections and requested far more detail with regard to site-specific details and material characterisation. **Patrice Piantone** agreed with the proposal and confirmed that France has a similar system in place. **Johannes Drielsma** questioned whether the guidance should be targeted at geotechnics and geochemistry alone. **Nils Eriksson** presented slides from the ICOLD bulletin on TMF failure rates and types. The range of failure modes clearly underwrites the need for competence in several areas. **Michel Sponar** pointed out that even if obviously qualified persons are needed to achieve proper inspection, it is not always

the case today in practice in the EU. The guidance document should take into account this reality by (1) providing clear indications on the requested competences and by describing different type of organisations allowing competent and independent inspections and (2) by giving enough indications on the inspection actions needed for different types of facilities whether in operation or closed/abandoned. He also requested that the team prepare statistics on EU failures alone even though, as several members of the meeting stressed, this may be misleading.

**Miroslav Angelov** made four points regarding the following: a): The need to consult other EU documents (IMPEL) with regard to guidance on inspection planning; b): Suggested that an evaluation system to assess the performance of inspecting engineers would be appropriate; c): Reminded the meeting that the results of the inspections would be publicly available documents; d) Raised the issue of training of inspectors. **Mike Cambridge** stated that an evaluation of inspecting engineers using multiple-choice or computer questionnaires would not be appropriate. However, most competent inspectors would be happy to submit their qualifications for certification. **Ferenc Madai** recognised the differences between tailings and mine waste rock in terms of geochemical interaction, and hence the extent of scientific competence required.

**Ann-Marie Fällman** requested clarification as to why inspection routines for post closure were not included. **Mike Cambridge** confirmed that post-closure inspection had been included in the slides and in the documentation provided. **Lars-Åke Lindahl** requested inclusion of both complex and simple examples of inspection plans/procedures. **Martin Brumby** indicated the possible need for training of inspectors at all levels and referenced the UK definitions of competence and the associated training schemes. **Pol O'Seasnain** indicated that there was a clear need for knowledge transfer with respect to inspection, experience and the development of competence. **Michel Sponar** indicated that the document should take cognisance of work being undertaken under TC292. **Johannes Drielsma** requested that the document clarify the extent of inspections pre mine start-up. **Mike Cambridge** confirmed that it was the intention of the document to confirm that inspection commence at the post-construction pre-deposition stage. **Miroslav Angelov** and **John Galvin** suggested that there should be communication with the IMPEL network. **Lars-Åke Lindahl** suggested that knowledge-transfer could be achieved through a European ICOLD tailings group such as SWECOLD and BDS. It was mentioned the MWD should be replaced by EWD in the guideline.

It was suggested to form a pool of experts at European level. The feasibility of this was questioned but international inspections were recommended in the case of trans-boundary impacts and category A facilities. In general, inclusion of external experience was recommended.

Michel Sponar made the following final comments:

- a) Minutes of the meeting would be available by the end of next week;
- b) Comments on the outline document should be sent to Michel and Ole before end July in order to give the consultants time for re-drafting.

### Review of the BREF document

**Nils Eriksson** briefly presented some of the first suggestions gathered so far on the opportunity to review the BREF followed by open discussion/presentations by the participants.

Comments during subsequent discussion: **Simon van Byl** found that the BREF is an irrelevant document, he only found two pages of interest (on limestone), and he questioned the validity of the BREF. **Marja Liisa Räisänen** requested an update of the BREF, since there are new mines with new processes, and there is currently nothing on sustainability and reduction of emissions. In Finland they are

preparing a guideline on Best Environmental Practices (BEP). **Ann-Marie Fällman** inquired whether an updated version of the BREF would be within the framework of the IPPC. **Michel Sponar** answered that it might or might not be upgraded to the Industrial Emissions (IE) Directive which, in case it is, may make the BREF a more binding document. **Ann-Marie Fällman** mentioned that the update could be made as a supplement. **Michel Sponar** said that an update may take two years or more depending on the availability of the IPTS team and would be likely follow the same procedures as the revisions of BREFs under the IE directive. **Lars-Åke Lindahl** stated that the document is already outdated by the time it is printed, and asked if it is actually used in the Member States. **Marja Liisa Räisänen** replied that the Finnish BEP is ready to be printed and already outdated. She suggested making the BREF more readable. **Joachim Scabronath** saw no need for a review of the BREF as far as lignite and coal is concerned. He asked if there is a genuine European interest in a review of the BREF or only a few Member States are interested? **Johannes Drilmsma** questioned whether there actually are any new processes now compared to when the BREF was written (2004), and whether there actually is new BAT or a review would just be correcting old sins? **Marja Liisa Räisänen** stated that they were seeing new types of sludges, gas emissions and new explosives that had not been addressed in the BREF. **Martin Brumby** suggested that maybe an internet version of the BREF (with restricted updating rights) would be appropriate. **Ferenc Madai** pointed out that the BREF (2004) was written before the EWD went into force (2006). **Johannes Drilmsma** asked if a review would take the form of an addendum or added chapters. **Mike Cambridge** suggested addressing fundamental errors in a corrigendum. **Marja Liisa Räisänen** found the instructions in the BREF old fashioned. **Michel Sponar** said it would be interesting to know how the Member States use the BREF today before deciding to modify the legal context along the lines followed under the Industrial Emission Directive .

#### **End of workshop**

**Michel Sponar** thanked the participants the good inputs and discussions and asked for comments to be returned to himself and Ole Hjelmar by mid-July. **Ole Hjelmar** also thanked the participants on behalf of the project team and asked them to put high priority on comments on inspections. Input concerning the potential update of the BREF is less urgent and may be submitted by the end of August.

**Annex – List of participants**

<b>Name</b>	<b>Affiliation/representing</b>
Johannes Drielsma	Euromines
Hans-Georg B�athge	Euromines
S�onia Clarena Bar�on	IMA-Europe asbl
Simon van der Byl	UEPG
Sandrine Devos	UEPG
Martin Brumby	UK Coal/Eurocoal
Joachim Schabronath	RAG/Eurocoal
John MacIntyre	DEFRA, UK
John Galvin	DEFRA, UK
Charlotte Danvers	Environment Agency, UK
Boguslawa Madej	State Mining Authority, Poland
Marja Liisa R�ais�anen	Geological Survey of Finland – Centre for Economic Development, Transport and the Environment
Kevin Mercieca	MEPA, Malta
Arthur Maurer	Mining Authority, Austria
Lars-�Ake Lindahl	CEN/TC 292 and SwedCOLD
Ion Nae-Mu�etoiu	Ministry of Environment and Forests, Romania
Mihai Bizomescu	Ministry of Environment and Forests, Romania
Eibhlin Doyle	Department of Communication Energy and Natural Resources - exploration Mining Division, Ireland
Pol O’Searain	EPA, Ireland
Ann-Marie Fallman	Swedish EPA
Ferenc Madai	MBFH, University Miskolc, Hungary
Zelmira Greifova	Environmental Geology Department – Ministry of Environment – Slovakia
Patrice Piantone	BRGM – French ministry of Environment
<b>Commission</b>	
Michel Sponar	DG Environment
Antje Wittenberg	DG Enterprise
Miroslav Angelov	DG Environment
<b>Project team</b>	
Mike Cambridge	Cantab Consulting
Nils Eriksson	DHI
Ole Hjelmar	DHI
Ferenc Madai	Miskolc University, Hungary

## **Workshop on the development of Guidelines on INSPECTIONS of mining waste facilities and a supporting document on CLOSURE of abandoned mining waste facilities**

**Lisbon, Portugal, 21-23 September 2011**

**The meeting will be hosted by ICSG in their offices, Rua Almirante Barroso, 38-6º, Lisbon**

### **Background:**

The European Commission, DG Environment, has retained DHI (Denmark) and its co-operation partners, Cantab Consulting Ltd (United Kingdom), University of Tartu (Estonia), Mecsek-Öko (Hungary), Miskolc University (Hungary) and VTT (Finland) to undertake the study “**Establishment of guidelines for the inspection of mining waste facilities, inventory and rehabilitation of abandoned facilities and analysis of the opportunity of reviewing of the reference document on the best available techniques (BREF)**”, study contract no. 070307/2010/576108/ETU/C2. The study takes place during the period November 2010 through December 2012.

As part of the project two workshops will be arranged. The first workshop, which was held in Brussels on June 30, focused primarily on inspections. The second workshop that will be held in Lisbon September 21-23, 2011 will continue the discussion of the guidelines on inspections on the first day and focus on rehabilitation of abandoned facilities on the second day. The third day will be dedicated to a field trip to study both operating and closed facilities. The discussion on the opportunity of updating the BREF will continue also during the second workshop.

### **Objectives of this workshop:**

The purpose of the workshop is to draw from the knowledge of invited experts on inspection as well as on closure methodologies and to consult stakeholders on:

- The second draft of the guideline on inspections
- The first annotated outline of a supporting document on closure and rehabilitation of abandoned facilities.

The workshop participants will receive an annotated second draft of the guideline on inspections and a first outline of the document on closure and rehabilitation of abandoned facilities prior to the workshop.

The objective of the field trip is to discuss at the site of an operating tailings management facility aspects related to inspections and to discuss aspects of closure on the site of a closed base-metal mine. For this purpose the Barragem de Serro de Lobo at the Neves Corvo mine will be visited as well as the closed Lousal mine.

**Programme Wednesday 21 September 2011:**

**10.00 – 10:30: Workshop starts** (Co-chaired by Michel Sponar and Ole Hjelmar)

- Michel Sponar from the EU Commission gives a short introduction to the workshop on INSPECTIONS and CLOSURE of abandoned mines.
- Ole Hjelmar: Brief information about the project, progress since last workshop in June, the deadlines and the objectives of the workshop.

**10:30 – 11:00: Guideline on Inspections – Received comments on first draft**

- Mike Cambridge and Ole Hjelmar: A summary of comments received on the first draft and how these comments have been addressed.
- All: Discussion

**11:00 – 13:00: Guideline on Inspections – second draft**

- Mike Cambridge: Presentation of the second draft of the Guideline on inspections
- Chapter by chapter: Presentation and discussion

**13.00 - 14:00: Lunch**

**14:00 – 15:30: INSPECTIONS continued**

- Mike Cambridge: Presentation of the second draft of the Guideline on inspections
- Chapter by chapter: Presentation and discussion

**15:30 – 16:30: Review of the BREF document**

- Short introduction by Nils Eriksson on the comments received at the last workshop on the opportunity to review the BREF followed by open discussion/presentations by the participants.

**16:30 – 17:00: Conclusion**

- Summary of discussions on Inspection (Mike Cambridge)
- Summary of discussion on review of the BREF-document (Nils Eriksson)
- Closing comments and next steps – Michel Sponar/Ole Hjelmar

**17.00 End of day one.** A joint dinner will be organised at a restaurant near the venue (at the participants own expense)

**Programme Thursday 22 September 2011:**

The second day will be co-chaired by Tamás Hamór and Gerry Stanley who co-chaired the TAC working group on Inventory of Closed Waste Facilities.

**09.00 – 10:00: Supporting document for the risk-based pre-selection protocol for the inventory of closed waste facilities**

- Tamás Hamór, Hungarian Office for Mining and Geology: Reprocessing of old mine inventory data using the principles of the draft guidance produced by the Inventory of closed waste facilities ad-hoc group, lessons learned. A few words on the red mud case.
- All: Discussion

**10:00 – 12:00: Guideline on Closure of abandoned facilities – first approach**

- Nils Eriksson: The objective of closure of abandoned facilities and the main contents of the draft outline of the supporting document on closure.
- All: Discussion and first reactions

**12:00 – 12:30: Inventory of closed mines and mine closure in Ireland**

- Gerry Stanley, Irish Geological Survey of Ireland: Inventory of closed mines and mine closure in Ireland
- All: Discussion

**12:30 – 13:00: Priorities from a river basin perspective: The Dalälven Project**

- Åsa Hanaeus, GVT Grundvattenteknik, Sweden: The Dalälven river management project - Conclusions from 30 years of experience from assessing, planning, implementing closure and rehabilitation measures and monitoring.
- All: Discussion

**13.00 - 14:00: Lunch****14:00 – 15:00: The legacy of abandoned mines. The situation in Portugal**

- Rui Rodrigues, President of EDM, Portugal
- All: Discussion

**15:00 – 16:00: ICOLD – Sustainable design and post-closure performance of tailings dams**

- Mike Cambridge/Nils Eriksson: Highlights from the coming ICOLD-bulletin on Sustainable design and post-closure performance of tailings dams
- All: Discussion

**16:00 – 16:15: Conclusion**

- Summary of discussions on Closure (Nils Eriksson)
- Closing comments and next steps – Michel Sponar/Ole Hjelm

**16:15 – 17:00: Introduction to field trip**

- Alfredo Franco: Summary of main points to focus on during the field trip and practical issues.
- Introduction to Inspections at Barragem de Cerro de Lobos
- Introduction to closure and remediation works performed at Lousal Pyrite Mine

**17.00 The workshop ends – Bus to Castro Verde (approximately 2 hours) to hotels and dinner at hotel (20:30)**

**Programme Friday 23 September:**

**07:00 – 07:30: Breakfast and check-out**

**07:30 – 08:00: Bus to the Neves Corvo Mine and the Cerro de Lobos tailings facility**

**08:00 – 10:30: Site visit to the Cerro de Lobos tailings facility at the Neves Corvo Mine**

- Visit to the Cerro de Lobo tailings pond which has recently been converted from under water disposal of tailings to paste tailings disposal in cells. The facility has an interesting record with regard to inspections and technology development.

**10:30-12:30 Bus to Lousal passing the Aljustrel rehabilitation works on the way**

- Very brief visit to the rehabilitation works at and around the Aljustrel complex sulphide ore mine, (an opportunity as it is on the way between Neves Corvo and Lousal).

**12:30- 14.15 Site visit to the closed Lousal Pyrite Mine**

- Lessons learnt from the closure and rehabilitation work performed at the Lousal Pyrite Mine which was operated from year 1900 until year 1988.

**14.15 – 15:00 Lunch**

- Lunch and visits of the reconverted industrial buildings into a restaurant, museum, Live Science Centre and physical rehabilitation works

**15:00 – 17:00 Bus to Lisbon Airport – Arrival at 17:00.** The bus will continue to hotels in Lisbon for those that prefer to stay.

# **Workshop on the development of Guidelines on INSPECTIONS of mining waste facilities and a supporting document on CLOSURE of abandoned mining waste facilities**

**21-23 September 2011  
Held at ICSG, Rua Almirante Barroso, 38, Lisbon**

## **Minutes<sup>3</sup>**

**Wednesday 21 September 2011**

### **Introduction**

**Michel Sponar** from the EU Commission, DG ENV started by mentioning a few “hot” or emerging issues in relation to mining waste, and in particular the discussion of whether or not shale gas waste should be covered by the Mining Waste Directive (MWD). He then described the background for the project and the workshop, which is to support the efforts to fulfil the requirements of the Mining Waste Directive and ensure that it is implemented in full. He described the objective of the first day of workshop, which was to discuss the second version of the draft guideline on inspections produced by the Consultant team on the basis of the outline presented and discussed at the first workshop on 30 June 2011 and the comments received during and after that workshop. He said that the document would be improved after the workshop and that it should then be a useful document for inspectors and Authorities. Michel Sponar mentioned that some of the issues covered by the guideline on inspections (e.g. inspection plans, auditing (“Category A”), frequency of inspections, transboundary aspects) most likely would be incorporated into a Commission Decision. He underlined the importance of a transparent process involving the stakeholders in the development of the guidelines. In addition, the participants should also continue the discussion of the opportunity to review the Best Available Reference document. Michel Sponar also presented the subjects of second day of the workshop, namely a first discussion of the outline of the supporting document on inventories and risk assessment/rehabilitation of closed/abandoned facilities and a number of presentations of experience with inventories and closures of mining waste facilities in the Member States.

It was pointed out that there seem to be a conflict between the February and May 2012 dates, and the appropriateness of including shale gas was questioned. Michel Sponar said that the timetable was set out in the Directive, and that emerging issues such as shale gas remained under consideration.

### **Tour de table<sup>4</sup>**

**Ole Hjelmar** from DHI (Consultant team) presented the objectives of the study, which are to support the Commission in implementing the specific aspects of Directive 2006/21/EC by:

1. providing the necessary technical information in order to prepare the technical guidance document on inspection as required under Article 22 (d) of the Directive;
2. reviewing the methodologies relating to the rehabilitation of closed and abandoned facilities in order to develop a supporting document for the Member States;
3. reviewing the BREF document on mining waste and assessing the opportunity to launch a revision of the BREF.

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<sup>3</sup> All presentations are available on the DHI web site : <http://mwf-info.team.dk.dhigroup.com>, user name: *TACMW* and password: *TAC*. The presentations can be found under *Shared Documents/Workshop on guidelines for inspection of mining waste facilities*.

<sup>4</sup> The list of participants is provided in Annex 1.

He also presented the status of the project, which was:

- The second draft of the guideline on inspections was submitted (to be discussed at the workshop)
- The first outline of a supporting document on closure/rehabilitation of mining waste facilities had been submitted (to be discussed on the second day of the workshop)
- Questionnaires on current regulation and practices in the Member States had been partly filled out by the Consultant team and sent out to the TAC members for completion/correction. So far only five Member States had responded. The Member State representatives present were kindly asked to return the questionnaires as soon as possible.

The final report on the study is due in December 2011, and the project ends on 9 February 2012.

Ole Hjelmar said that apart from receiving comments on the two documents, the Consultant team looked forward to receiving input, views and inspiration from authorities and industry through the discussions, presentations and the field trip on Friday.

### **Guideline on Inspections**

**Mike Cambridge** (Consultant team) then presented the second draft version of the guideline on inspection. The draft document had been sent to the workshop participants shortly before the workshop. Some of the main issues commented and discussed during and after the presentation are summarised in the following:

**Johannes Drielsma** was concerned at the intent of the document and questioned the appropriateness of the prescriptive language used in the second draft. The reference to the 2001 Parliament and Council Recommendation on minimum criteria for environmental inspections (2001/331/EC) regarding public availability was also questioned - he stated that there is no legal requirement to publish data related to the inspections. The concern that a clear distinction between guidance and mandatory requirements was lacking was shared by **Joachim Schabronath**. **Gyozo Jordán** indicated a need for minimum requirements for compliance with the MWD and suggested that this include three components: MWD compliance, national regulations, and expert knowledge. **Mike Cambridge** said that the English used is standard for inspection manuals across Europe and the intention was not to be prescriptive. He suggested that the phrasing “may be” could replace “will be” throughout the text – there was general agreement that this would be helpful. **Michel Sponar** indicated that the document should provide a transparent system of non-prescriptive inspection guidance and a toolbox for regulators with little or no experience of inspections. The document should include a check-list as part of the toolbox. He also proposed the term “may include” rather than “shall include” in the text and he requested that practical aspects of inspection planning be presented in the form of charts. He also stated that risk assessment is a fundamental part of facility classification and thus should be included in the document. **John Galvin** stated that any lists should be related to compliance requirements and permit conditions and should not require repetition of any element covered by the permit, i.e. it should not imply the need for an environmental risk assessment to be repeated without good cause. **Mira Tayah** stated that any check-list should be considered on a case-by-case basis i.e. be case-specific and by permit, not by BAT. **Lars-Åke Lindahl** warned that a too detailed toolbox could mislead inexperienced and insufficiently qualified inspectors and cause them to perform inadequate inspections in good faith. He also stated that mere legal compliance is insufficient and that safe operation is the key issue and goes far beyond regulatory compliance. **Johannes Drielsma** urged caution with respect to check-lists as these may be considered to be prescriptive by some regulators even though the guidance is stressing the site-specific nature of inspections. Some flexibility should therefore be implied in the wording.

**Robert Holnsteiner** inquired about the Commission’s plans with the Decision. **Michel Sponar** replied it must be brief and have added value. The Guidance document should address the requirements of the MWD and the best practice, whereas the Commission Decision should address inspection plans by the competent authorities, frequency of inspection and transboundary emission (possibly joint inspections), and focus on category A facilities. He also said that the Guidance document and the Decision should be developed simultaneously.

The role (in terms of independence and responsibility) and required qualifications of the “competent person” or “inspecting engineer” as referred to in the document was the subject of much discussion (and it was agreed to use only one term in the document). **Johannes Drielsma** agreed that the independent auditor (yet another term used) may be employed by the Competent Authority, and stressed that the independent auditor should be independent of the design team. He also stated that it is the responsibility of the Competent Authority to undertake inspections. **Michel Sponar** asked the Member State representatives if they are capable of performing inspections with their own personnel or if they need independent expertise. **Robert Holnsteiner** replied that Austria currently uses a system similar to that proposed, i.e. all inspections are undertaken by an expert selected from a pool of experienced civil engineers with strict qualification requirements. These engineers hold government-appointments and their reports are publicly available – and public availability creates confidence. **Antje Wittenberg** mentioned that the document should be practical, and that the focus should be on skills, not on independence. There should be some flexibility for the Member States. **Gyozo Jordán** suggested that too much responsibility might be placed on a single person undertaking independent inspections. **Tamás Hamór** said that the key word is “accountable” and questioned the legal standing of the inspections as proposed in the draft document. He also asked how the result of an inspection would be reported back to the operator and the Competent Authority. It was his opinion that the inspector should be contracted by the authorities, but the bill could possibly be passed on the operator. **Robert Holnsteiner** disagreed with that. **Michel Sponar** mentioned that in Belgium the operator pays and the results are reported both to the operator and the Competent Authorities. **Pol O’Sesnain** stated that in Ireland the operator is responsible, they may undertake to hire the independent expert, but the accountability should be (and is) with the company. **Johannes Drielsma** agreed that the company is responsible, but pointed out that there also are legal requirements for an authority to enforce the regulations. **Lars-Åke Lindahl** found it strange that Article 17 in the MWD only refers to inspections by the competent authority, while it is important to realise that only the operator can take the responsibility as shown for example by Article 11.2 (c) in the same directive. He advised a clear separation between Article 17 – inspections (not related to daily inspections) and other inspections. Independent expert audits could be carried out by an independent expert or by the Competent Authority. SWEDCOLD has accepted the need for tiered inspections. He also found that independent audit is part of BAT.

Concerning the frequency of inspections, there were several views. Article 17 in the MWD actually requires the Competent Authorities to fix the frequency of inspections of MWFs. **Robert Holnsteiner** advised against this, except for Category A facilities. The participants offered examples of recently inspected facilities that failed – the frequency may depend on a site-specific risk assessment. **Mira Tayah** stressed that frequency and detail of proposed inspections must be based on risk assessment. She also suggested that for clarity, relevant sections of the MWD be cut and pasted into the Guidance document. Both **John Galvin** and **Charlotte Danvers** warned against repetition of risk assessments already performed as part of the permit. In this context the original risk assessment should merely be verified and confirmed or challenged. **Gyozo Jordán** said that in a risk assessment, the source, pathway and receptor should receive equal attention – this could influence the expertise required. **Joachim Schabronath** stated that frequencies (and checklists) should be presented as examples.

**Gerry Stanley** suggested the inclusion of definitions at the beginning of the report, emphasised the need for an expansion of the sections on closure and post closure, and the inclusion of the silt lagoon cross-section. He noted that in Ireland the cost of such inspections is paid for through the licence fee and the independent expert is appointed by the Competent Authority. Finally, he requested the use of consistent terminology, suggested inclusion of generic lists and that sites which may be reprocessed should be discussed. **Alfredo Franco** thanked the team for an excellent draft Guidance document but requested the use of more commonly accessible language style. **Gyozo Jordán** suggested including a review of practice in the USA, Canada and Australia. **Robert Holnsteiner** requested clarity with regard to inclusion of new technologies and BAT.

**Mike Cambridge** thanked the participants for their helpful comments and **Michel Sponar** noted, in summary, the need to check the terms of a permit, the added value derived from inspections with regard to the permit, the role of auditing and the overriding concern of improving safety. Finally, he

requested that clear phases for the different inspection routines be included in the report, preferably in chart form. The participants were requested to submit written comments to the Consultant team and Michel Sponar by 12 October – it may not be possible to consider contributions received later that. The Member State representatives were urged to also send any examples of existing regulation or practice in relation to inspection of mining waste facilities they might have.

### **Review of the BAT document**

**Nils Eriksson** (Consultant team) gave a brief presentation on the background for a possible revision or update of the BAT document on management of mining waste (which was also discussed at the workshop on 30 June 2011):

- The BAT-document was developed almost 10 years ago (2001-2004)
- EU15 has become EU27!
- New "best practice" and "guidelines" have been developed worldwide (e.g., the GARD-Guide, ICOLD bulletins on Tailings Dams Safety (#139)) and within the EU (e.g., Guidelines on characterisation)
- New commodities are being extracted
- New processing technique is being implemented

Apart from updating and correcting existing information, a review could include:

- Additional "new" commodities and processes – different water quality and waste management issues to consider.
- "New" technologies, especially leach technologies (tank and heap-leach), are being developed and implemented which will produce tailings with different characteristics than other processing options
- Sludge management
- Uranium mining is becoming economically attractive again which should be reflected in the BREF (SEC(2011) 340 final "*Situation concerning Uranium mine and mill tailings in the European Union*")
- Focus on "other contaminants" (thio-salts, N, etc.) require more sophisticated water treatment which is now being implemented
- Dry tailings disposal, paste tailings or thickened tailings disposal is being implemented or is planned at various sites for a range of waste characteristics
- Process development and environmental aspects is making cyanide recovery processes more economically viable/necessary (especially if N-treatment may be required)

Comments received during and after the workshop in June included for example the following statements: "the BREF is an irrelevant document", "an update of the BREF is required, since there are new mines with new processes, and there is currently nothing on sustainability and reduction of emissions", "the document is already out-dated by the time it is printed", and "an up-date rather than a review is required".

**Lars-Åke Lindahl** asked if the Commission position on inclusion in the IED (Directive 2010/75/EU on industrial emissions) was clear. The MWD is not covered by the IED. **Michel Sponar** did not want to open the directive to discussion, but later the BAT would follow the IED. Currently, the Commission is overloaded with work. Shale gas may require a specific BAT document. Non-radiation issues concerning uranium mining waste should be included in the BAT on mining waste. **Robert Holnsteiner** asked if the operators use the BAT document. He himself had only looked in it twice in seven years. **Johannes Drielsma** said that operators refer to it in initial discussions with the authorities but not at a technical level. **Mike Cambridge** said that the BAT document had been used against operators to prevent them from using widely applied techniques that were not included the BREF. **Alfredo Franco** said that they had experienced the same thing in Portugal and that the BREF should therefore be changed. **Margareta Wahlström** mentioned that the new CEN methods for characterisation of mining waste should be mentioned in the BAT document. **Pol O'Seasnain** said that in Ireland they check permits against BAT (gap analysis). **Michel Sponar** said that not all Member States appear to

be checking permits against BAT. The IPPC people in the Commission checked the use of BREFs – and as a consequence, changed the legislation.

Comments on the need to review or update the BREF on management of mining waste should be submitted to the Consultant team and Michel Sponar no later than 31 October 2011.

## **Thursday 22 September 2011**

The second day of the workshop was co-chaired by **Tamás Hamór** and **Gerry Stanley**.

### **Inventory and rehabilitation of closed/abandoned mining waste facilities**

**Tamás Hamór** gave a presentation on Reprocessing of old Hungarian mine inventory data using the principles of the draft guidance produced by the Inventory of closed waste facility ad-hoc group, lessons learned (the presentation can be downloaded from the internet, see footnote on page 1). He also discussed the red mud accident at Kolantár and explained that it was caused partly by faulty design calculations and establishment of a groundwater barrier leading to a smectite collapse below the dam, partly by use of inappropriate materials for construction of the dam.

**Gyozo Jordán** gave a presentation on Mine waste inventory implementation in Hungary (the presentation can be downloaded from the internet, see footnote on page 1). He demonstrated a very impressive prioritisation procedure reducing 15,000 potential sites to only 165 sites to be investigated in detail for the necessity of rehabilitation.

**Nils Eriksson** (Consultant team) presented the first outline of the Supporting document on closure methodologies for closed and abandoned mines. After the presentation, the outline was commented and discussed:

**Michel Sponar** suggested that Portugal should provide input for the supporting document based on their extensive experience with rehabilitation. **Hugh Potter** mentioned that if we just focus on the facilities we may end up without benefits, and he agreed with Nils Eriksson statement that we need to consider the entire operation. **Alfredo Franco** said that they used the term “orphan” for an abandoned facility for which the former owner cannot be identified (but it seems that orphan and abandoned are used synonymously). Michel Sponar proposed the inclusion of a section on opportunities for re-exploration in the document. **Gerry Stanley** said that it is necessary to show that something is done even if the goal will not be reached for many years. **Lars-Åke Lindahl** said that the rehabilitation requirements may look overwhelming, so there is a big need for setting priorities as well as a huge need for funding. There is much focus on metal mining and long term ARD problems – it is also necessary to focus on acute situations. He also proposed to refer to the work carried out by CEN/TC 292 in the document. **Robert Holnsteiner** did not find the chapter on costs useful and suggested to skip it and focus on technical issues. **Michel Sponar** replied that it is difficult to give guidance without referring to costs, but maybe the presentation could be rearranged. Nils Eriksson said that funding is an important issues that is, of course, site-specific, but it is important to get a feeling of the order of magnitude. **Johannes Drielsma** requested lessons learned from the US Superfund (is to some extent addressed in the document). **Hugh Potter** mentioned that 8% of the rivers in the UK are not in good condition due to mining and mine waste and it takes a long time to rehabilitate even in a prioritised way. **Michel Sponar** found it important to push mining waste authorities in the direction of the MWD, and that there could easily be confusion between the general strategy of the authorities and in-depth remediation of sites. Portugal has made a good start and is a good example of a European country with in-depth experience. He would like to see a step-by-step approach summarised in a table or tables for people who are busy. **Gyozo Jordán** said that the draft outline was a good achievement – he liked the international review – and he would send references and written comments, including a check-list. **John O’Neill** asked for a definition of closure (on a timescale) since this would be valuable for the end-user. He recommended public/private partnerships and stressed the importance of making sure

that all stakeholders are on board. He also found it important to address cost in the document. **Nils Eriksson** thanked for the comments and inputs and said that quick responses would be appreciated. Written comments should be sent to the Consultant team and Michel Sponar by 12 October 2011.

**Gerry Stanley** gave a presentation on the Inventory of closed mines and mine closure in Ireland, in which he presented an overview of historic mines in Ireland, the scoring system and the results of applying it as well as some examples of remediation projects (the presentation can be downloaded from the internet, see footnote on page 1). He emphasised the necessity of a historic approach, much waste is scattered around the old mines, and safety is important. Pb is the single most important contaminant on Irish mine sites.

**Hugh Potter** asked how Ireland would produce the screening results to be reported according to Article 20 in the MWD. **Gerry Stanley** replied that it is available and can be retrieved from the system. **Lars-Åke Lindahl** asked if considerations of hazardousness – which was considered important – then determined everything in the ranking. **Gerry Stanley** answered that this was not the case, an Hg-contaminated site, for example, got a middle ranking because it was a modern site. **Johannes Drielsma** asked if bioavailability has been considered, and **Gerry Stanley** answered that it has not, because it is controversial and there are no standard methods. **Gyozo Jordan** asked if they had considered the US EPA ranking system. **Gerry Stanley** replied yes they had, because their AIMMS-based system is a further development of the EPA system.

**Åsa Hunaeus** gave a presentation of the Remedial measures taken at the Falun mine site in Sweden, including both experiences from the regional Dalälven River Management project (1987-1990) and the Falun Project (1992-2008) as part of this (the presentation and two papers on the subject can be downloaded from the internet, see footnote on page 1). The measures taken included both in-situ flushing and subsequent dry cover application at a pyrite cinder disposal site, dry cover of a tailings pond, and collection and treatment of AMD.

**Rui Rodrigues** expressed the satisfaction of EDM to host the workshop and presented the Legacy of abandoned mines, where he gave a brief overview of the problems associated with abandoned mines, the financial requirements of solving these problems, and a view to the role of EU and its Member States in the future post mine transition period. (the presentation can be downloaded from the internet, see footnote on page 1).

**Sofia Barbosa** gave a presentation on the Portuguese Concession Act for environmental remediation of abandoned mines. This included an overview of the mining industry in Portugal, the establishment of an inventory, prioritisation of abandoned mines and mining waste facilities and a number of examples of rehabilitation measures (the presentation can be downloaded from the internet, see footnote on page 1).

Due to time constraints, the planned presentation on ICOLD – Sustainable design and post-closure performance of tailings dams was not given, however, it can be downloaded from the internet, see footnote on page 1).

**Mafalda Oliveira** then gave an introduction to the site visit the next day to the Neves Corvo Mine and in particular to the Cerro do Lobo tailings management facility where Somincor/Lundin mining has started disposal of paste/thickened tailings (the presentation can be downloaded from the internet, see footnote on page 1).

**Gerry Stanley** rounded off the day and thanked all the presenters for their efforts.

**Michel Sponar** thanked the participants for their contributions and in particular the Portuguese hosts for the very good organisation of the workshop, and mentioned the important leading role of Portugal in the rehabilitation of closed and abandoned mines. He also reminded the participants that comments on the two documents should be sent to the Consulting team and the Commission by 12 October 2011.

On behalf of the Consulting team **Ole Hjelmar** thanked the participants for their very active participation in the workshop and for all the comments received so far. He also thanked the Portuguese hosts for their hospitality and expressed in particular the gratitude of the Consulting team to **Alfredo Franco** who had been extremely helpful in getting the workshop organised.

### **Friday 23 September 2011**

Site visits in southern Portugal:

1. Neves Corvo Mine and the Cerro de Lobos tailings facility
2. Rehabilitation works at the Aljoustrel sulphide ore mine
3. The closed Lousal Pyrite Mine (rehabilitation works) and visit to the museum and the Live Science Centre.

The visits were very interesting and very well organised, and held many points of interest with respect to tailings management, monitoring, inspection, management of AMD, rehabilitation, science and mining technology education, and local history.

## Appendix 1: List of participants in the workshop

Name	Affiliation/representing
Johannes Drielsma	Euromines
Mira Tayah	Carmeuse/IMA-Europe
Lars-Åke Lindahl	CEN/TC 292 and SwedCOLD
Joachim Schabronath	RAG/Euracoal
Hugh Potter	UK Environment Agency
John Galvin	DEFRA, UK
Charlotte Danvers	UK Environment Agency
Adam Bastek	Ministry of the Environment of Slovakian Republic
Alfredo Franco	Panasqueira Mine, Portugal (MD)
Fernanda Rodrigues	Agência Portuguesa do Ambiente
Carla Teles Dias	Agência Portuguesa do Ambiente (someone else came)
Carlos Caxaria	DGEG, Portugal (Vice-General Director)
Rui Rodrigues	EDM, Portugal (President and CEO)
Gaspar Nero	EDM, Portugal (Board Director)
Fátima Nunes	Somincor, Portugal
Luís Morais	DGEG, Portugal
Mafalda Oliveira	Somincor, Portugal
Patrícia Falé	DGEG, Portugal
José Martins	EDM, Portugal
Sofia Barbosa	EDM, S.A.
Bruno Simplício	General Inspectorate of Environment and Spatial Planning (IGAOT)
Pol O'Seasnain	EPA, Ireland
Gerry Stanley	Geological Survey of Ireland
John O'Neill	Environment Inspectorate, Ireland
Tamás Hamór	Hungarian Office for Mining and Geology
Gyozo Jordán	Geological Institute of Hungary
Lívía Vig	National Inspectorate for Environment, Nature and Water, Hungary
Jánosné Tolnai	National Inspectorate for Environment, Nature and Water, Hungary
Robert Holnsteiner	Fed. Min. of Economy, Family and Youth, Sect. on Energy and Mining, Austria
Åsa Hanaeus	GVT Grundvattenteknik, Sweden
Maria Ujfalusi	Swedish EPA
<b>Commission</b>	
Michel Sponar	DG Environment
Antje Wittenberg	DG Enterprise and Industry
<b>Project team</b>	
Mike Cambridge	Cantab Consultants Ltd (Consultant team)
Nils Eriksson	Consultant group, DHI (Consultant team)
Ole Hjelmar	Consultant group, DHI (Consultant team)
Margareta Wahlström	Consultant group, VTT (Consultant team)