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Preface: Environment Australia

In the last 10 years, we have come a long way in learning how to better protect the environment that sustains all of us. Once at the margins of politics and the economy, the environment is now a mainstream issue that lies at the heart of development. Increasingly, corporations are being judged not only on their profits, but also on their environmental and social performance. In short, governments, industry and the community accept that the environment is everybody's business.

The mining industry, with its potentially dramatic impact on the environment, has been one of the first sectors to recognise and respond to this trend. In Australia, it is working with government and community organisations on finding innovative and far reaching solutions to environmental problems, from minimising waste and monitoring operations, to returning mined land as far as possible to its original condition.

The Best Practice Environmental Management (BPEM) in Mining program is a world-renowned partnership between the mining industry, stakeholder organisations and the Australian Government. It aims to help all sectors of the minerals industry – minerals, coal, oil and gas – to protect the environment and to reduce the impact of minerals production.

Since the program began in 1994, Environment Australia has worked with industry partners to produce 24 booklets on a range of topics, from community consultation to water management and cleaner production. The booklets present concise, practical information on how to achieve environmental management best practice in the minerals industry anywhere in the world.

In conjunction with the United Nations Environment Programme (UNEP), Environment Australia has developed this training kit to move the BPEM program into a new phase. It assists trainers in developing training sessions based on the BPEM booklets and provides presentation slides, notes, a selection of case studies and worksheets. The involvement of UNEP has been invaluable in ensuring the kit's international focus. Moreover, I applaud UNEP for its ongoing role in promoting awareness of best practice environmental management techniques in developing countries.

The future of the BPEM program is strong and is set to continue to provide relevant, up-to-date information on mining issues. I thank all of those who have contributed to this production and I hope that it will encourage the mining industry as its culture evolves towards best practice environmental management.

David Kemp
Federal Minister for the Environment and Heritage
Australia

Preface: United Nations Environment Programme

The environmental effects of the mining industry include destruction of natural habitats, changes in river regimes and water tables, and other serious ecological impacts. Although the industry has succeeded in making improvements, serious problems remain. Creating a better understanding of the issues at stake and how to tackle them is a crucial first step toward a more long-term sustainable management approach.

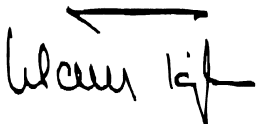
In this regard, UNEP is pleased to be associated with the new Training Kit for the Australian Government's Best Practice Environmental Management (BEPM) in Mining program. For many years the BPEM booklets have been, and will continue to be, an immensely valuable resource. With the new training kits, the mining sector now has the additional tools to turn the principles of environmental management into practical action.

As part of its work on improving environmental performance in the mining sector, UNEP has undertaken several critically important initiatives with various partners. For example, due to problems associated with cyanide use, UNEP initiated the development of an industry cyanide code for its use in gold mining with the International Council on Mining and Metals. The code was completed in December 2001. The code's standards of practice and the BEPM module on cyanide management complement each other well.

UNEP is also addressing other mining related issues including energy demand, abandoned sites, biodiversity, protected areas and water management. In addition, a global mercury assessment is underway and an APELL for Mining handbook, aimed at reducing the risk of accidents and developing local emergency preparedness should an accident occur, was made available last year.

Through these initiatives and more, UNEP is striving to help the mining industry to achieve its ambitious environmental and social targets. To succeed, we believe a policy mix including regulatory measures, economic incentives and voluntary initiatives are necessary. Also, we recognize the essential need for the provision of timely and appropriate information to all those working in the sector.

The mining industry faces many challenges in the coming years. Its commitment to sustainable mineral development needs to continue to evolve. The BPEM training kit represents another important and very welcome resource that should help the various stakeholders in the mining sector to meet these challenges more effectively.



Klaus Topfer
Executive Director
United Nations Environment Programme

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How to Use this Kit

This trainers' kit has been produced to help you to develop and deliver effective training sessions that will contribute to improving the environmental performance of the mining industry.

This training kit is NOT meant to provide a complete course in itself. It presents a framework for developing training sessions appropriate to your country and site. Each country and region will have its own regulatory regime, as well as different climatic, geographic, economic, technological, infrastructure, cultural and topographic issues. Such issues will need to be added by the trainer to ensure that the training sessions are relevant.

It is also important to focus attention of participants by using site visits or illustrations such as 35 mm slides or simple videos. Graphs or tables about mining in your country should be added to supplement the more general material included in the kit. Remember that abstract ideas will have little effect. People learn best when training starts from the known and familiar. It is essential to add site specific material, and to draw upon the skills and knowledge of the participants.

The kit includes nine modules based on part of the Best Practice Environmental Management in Mining series of booklets (BPEM booklets). These booklets, as well as all the others booklets in the series, can be accessed free of charge from the Environment Australia website: http://www.ea.gov.au/industry/sustainable/mining/index.html In addition, this entire kit is also posted on the website.

The modules included in this kit are:

- Overview of Best Practice Environmental Management in Mining
- Mine Planning for Environment Protection
- Environmental Management Systems
- Environmental Risk Management
- Environmental Monitoring and Performance
- Water Management
- Cyanide Management
- Managing Sulphidic Mine Wastes and Acid Drainage
- Tailings Containment

It is essential to read the BPEM booklets in conjunction with the training materials in the kit. The kit is designed to highlight key points and issues and does not cover all of the material and case studies presented in the booklets.

The kit consists of three volumes. **Volume 1** includes the Overview module, a General Trainers' Guide, References and Further Reading, and a Glossary. **Volume 2** covers the management topics, and **Volume 3** the technical topics. A **CD ROM** is included that contains an electronic copy of all the printed materials as well as supplementary case studies, worksheets and handouts.

Each module consists of a set of PowerPoint slides showing key points. These are supplemented with material on a Summary Sheet. The Summary Sheets include a miniature of the slide in the top right-hand corner. The left-hand column contains notes for the trainer that refer to the relevant section of the BPEM booklet and expand on the points in the slide. Under the slide miniature are Tips that suggest group exercises, case studies, and sources of further information. See Figure 1 for an example of a Summary Sheet. Some of the modules also include worksheets, specific case studies, or handouts. These are found on the CD ROM.

The slide masters can be printed from the CD ROM and photocopied on to overhead transparencies. Using the overhead transparencies will help you to guide discussion and input by the participants.

Each module has two PowerPoint files on the CD ROM. The title slide is a separate file, and the rest of the slides are designated as "FollowON". For example, the Tailings Containment files are called Tailings_Title_Slide and Tailings_FollowON_Slides.

You should open both files. To print, you should click **File**, and then **Print**. This gives you a choice at the **Print what** box. If you choose **Slides**, the full-size OHT slides are printed. If you choose **Notes Pages**, the Summary Sheets included in the folders are printed.

The case studies, worksheets, and handouts can be opened from the CD ROM using Word for Windows.

The General Trainers' Guide presents suggestions about planning and presenting effective training sessions for adult learners. Emphasis is placed on group work and case studies to encourage active learning, and to make the most of participants' skills, knowledge, and experience.

A number of case studies are provided in the kit. Some of these are very short and included in the **Tips** column of the summary sheets. These are intended to illustrate particular points covered in the module.

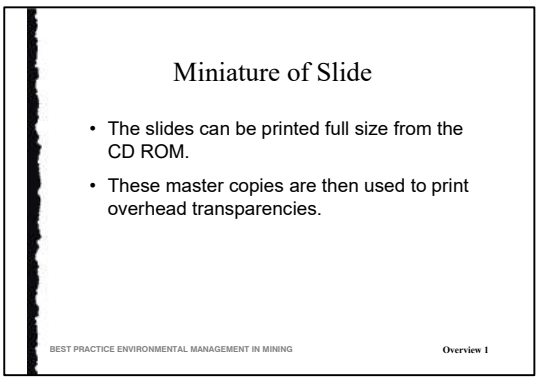
Some case studies are included on work sheets as part of specific modules. A number of other case studies are included on the CD ROM. These are listed in the **Case Study Index** which shows the suggested applications for each case study. In addition many case studies can be accessed from the Internet. The BPEM booklets all contain a range of other case studies that may be relevant to your situation.

Other websites that have a range of case studies include Australian Minerals and Energy Environment Foundation (AMEEF), Environment Australia-Eco-Efficiency and Cleaner Production, International Council on Mining and Metals, and the Minesite Drainage Assessment Group. These are all listed in the References and Further Reading section of Volume 1.

FIGURE 1 Sample Summary Sheet

Trainers' Notes

This column indicates the relevant section of the corresponding BPEM booklet. This section should be read in conjunction with the trainer's notes when preparing for the training session. These notes expand on the material that is summarised on the slide, and will help the trainer to discuss the topic.



TIPS

This column contains suggestions for presenting the material shown on the slide.

In addition, sources of further information about the topic are included here.

Case Study Index

Several short case studies are included in the Tips column of the summary sheets. These are intended to illustrate specific points covered in the module. They are not listed in this Index.

The CD ROM includes a number of case studies that are presented as work sheets keyed to a specific module. Other case studies on the CD ROM are of more general application. These are included in a general case study file.

The table below lists the case studies, their suggested application, and their location on the CD ROM.

Case Study	Suggested Application	Location on CD ROM
UDANAX—four case studies located in a mythical industrially developing country.	1. Mine Planning; Environmental Risk Management 2. Tailings Containment; Environmental Risk Management 3. Environmental Monitoring and Performance; Water Management; Mine Planning 4. Managing Sulphidic Mine Wastes and Acid Drainage; Environmental Risk Management; Tailings Containment, Environmental Monitoring and Performance	Case Studies
Kaltim Prima Coal, Kalimantan, Indonesia	Managing Sulphidic Mine Wastes and Acid Drainage	Case Studies
Copper mining in the Andes	Tailings Containment; Environmental Risk Management; Mine Planning	Case Studies
Los Frailes Tailings Dam Failure	Environmental Risk Management; Tailings Containment	Environmental Risk Management
Waste Management at Alcoa	Overview module to illustrate the economic benefit of good environmental management	Case Studies
Cyanide Spill at Tolukuma	Cyanide Management; Environmental Risk Management	Cyanide Management: Worksheet 2
Eastern Goldfields, Western Australia	Mine Planning	Mine Planning: Worksheet 2
Base metal mine in the Murchison region of Western Australia	Water Management; Mine Planning	Water Management: Worksheet 4
Kidston Mine Waste Rock Dump Closure Strategy	Overview module to illustrate use of the precautionary approach; Managing Sulphidic Mine Wastes and Acid Drainage	Case Studies
Thiess' Environmental Management System	Environmental Management Systems	Case Studies
Hamersley Iron – Marandoo – Western Australia	Environmental Monitoring and Performance	Environmental Monitoring and Performance