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**WWF's Report on
"Toxic waste storage sites in EU countries"**

**Suggested Action at
the European Union Level
to Prevent Unregulated,
Accidental Pollution From
Metal Mining Activities**



SUMMARY

WWF considers that the following action is needed at the EU level in order to ensure a high level of protection of human health and the environment, not only from pollution caused by heavy metal spillages from tailings lagoons such as occurred in Doñana, but also from chronic metal pollution from tailings lagoons leakages and abandoned mines.

INVENTORY **1. To draw up** an EU comprehensive (public) inventory of (active and abandoned) metal mines and (active and abandoned) tailings lagoons, existing measures for environmental management and monitoring of tailings lagoons, known spillages and significant leakages from tailings lagoons, pollution levels caused by waste from mining activities and areas affected by such pollution.

ACTION PROGRAMME **1. To develop a Community Action Programme on "Responsible Mining Waste Disposal"**, in partnership with the mining industry and environmental organisations, for the assessment of the specific environmental and human health risks from tailings lagoons and waste from metal mining activities in general at the Community level, based on the above-mentioned inventory, and taking into account, *inter alia*, the vulnerability of the receiving (wetland) environment.

The programme should also comprise action directed towards developing and promoting: Emergency Plan guidelines; EU-wide technical standards on tailings containment; "safe" mine closure phases; projects for the environmental re-habilitation of mines and tailings lagoons; and "safer" mining waste disposal methods, such as re-emplacement of mining waste in the mine void.

EVALUATION & A NEW SET UP **1. To evaluate** the reasons why existing EU legislation on waste (Framework Directive on Waste) as well as other EU legislation requiring environmental protection such as that on environmental impact assessment (EIA Directive), nature conservation (Birds and Habitats directives) and regional policy (Structural Funds), has not been successful in preventing pollution from tailings lagoons and metal mining activities in general.

2. To set up a specific Community legislative framework on "Mining Waste Management" which should exploit the opportunities offered by the above-mentioned legislation, and by other existing EU environmental legislative tools in the areas of waste (Hazardous Waste Directive: *to include mining waste in the "hazardous waste list" so that it is subject to more stringent disposal requirements etc.*), and control of major accident hazards (SEVESO Directive: *to extend the scope of the directive to include mining activities*).

3. This legislative framework on "mining waste management" should also make use of relevant measures from Community environmental legislation which are now in the pipeline in relation to water protection (draft Water Framework Directive: *to "export" the river basin/catchment approach to planning for "good water status", introduced by this directive, to all other relevant legislation*) and environmental liability (White Paper on Environmental Liability: *to establish binding rules on liability for "biodiversity damage" for all activities regardless whether the damage occurs inside or outside Natura 2000 areas*)

IMPLEMENTATION & ENFORCEMENT **1. To ensure the implementation and enforcement** of the relevant Community legislation at the national level, in particular environmental legislation. This means that the "legal unit" within DGXI of the European Commission should be provided with the necessary resources and technical/specialised staff.

ENLARGEMENT & FUTURE ISSUES **1. To involve accession countries** in any EU action carried out to protect human health and the environment from accidental pollution from metal mining activities.

2. To consider broadening the scope of any action work following the suggestions made here for metal mining waste (i.e. Inventory, Action Programme etc.) to include other comparable waste such as waste from the fertiliser industry.

3. To try to ensure that any standards developed at EU level are transferred to mining activities elsewhere in the world.

Bearing in mind the following:

The findings of the Report on "Toxic waste storage sites in EU countries", commissioned by WWF¹ in the aftermath of the pollution caused by the heavy metal spillage from the tailings lagoon of the Boliden mine "Los Frailes" in Aznalcollar, southern Spain, on the Doñana wetland area on 25 April 1998.

That metal mining activity is of significant importance in four EU Member States (FI, GR, SE & ES) and that smaller amounts are mined in another four (AU, FR, IRL & PO). Furthermore, that abandoned mines occur in seven Member States (BE, DE, DK, IT, LUX, NL & UK) and that there are mine tailings lagoons (active and/or inactive) in Italy, Spain, Sweden, Ireland, Portugal and the United Kingdom.

That evidence of significant accidental pollution problems caused by leakages and spillages from mine tailings lagoons and by abandoned mines (acid mine streams) can be found in at least five EU Member States (ES, IT, PO, SE & UK).

The World Bank's 1998 "Environmental Assessment of Mining Projects" which lists the potential detrimental impact of metal mining in general, both on human health and the environment, and rates the management of tailings as one of the most significant environmental threats from mining operations.

That aquatic systems such as wetlands (i.e. streams, rivers, floodplains, lakes, marshes, estuaries etc.) are particularly vulnerable to pollution from mining activities, as these are usually located near rivers or lakes given that water is both a vital raw material for the processing of mineral ore and a major waste stream.

That heavy metals and the acidic discharges from tailings lagoons and abandoned metal mines constitute a severe threat to human health and the environment. That heavy metals, in particular, are not only highly toxic but also bioaccumulative and persistent, and hence they have long-term - both acute and chronic - detrimental effects on the environment throughout the food chain.

The Treaty on European Union's request that environmental protection requirements must be integrated into the definition and implementation of all Community policies and activities in order to promoting sustainable development.

That the European Union has competence over mining waste management (Framework Directive on Waste), but that Member State implementative measures have varied greatly in terms of the approach taken.

The "precautionary principle" and the principles of "preventive action" and of "rectification of the environmental damage at source" enshrined in the Treaty.

The RAMSAR Convention covering all aspects of the conservation and wise use of wetlands (i.e. streams, rivers, floodplains, lakes, marshes, estuaries etc.) to which all EU Member States are Contracting Parties, and which lays down a wetland risk-assessment framework for human impact, and requires the drawing up of national wetland policies as the key means for delivering "wise use".

The OSPAR Convention for the protection of the marine environment of the North-east Atlantic to which twelve EU Member States and the European Commission are signatories, and which requires the Contracting Parties to adopt programmes and measures for the prevention and elimination of pollution from land-based sources, and to take preventive measures to minimise the risk of pollution caused by accidents.

The self-evident administrative, legal, economic and operational problems surrounding the cleaning up, restoration and prevention of further deterioration of the Doñana wetland area, which show that an integrated management plan with participation of all the relevant socio-economic actors needs to be developed in order to guarantee the efficiency of conservation measures in this or any other affected area.

The European Commission's will to further consider the management of waste resulting from mining, quarrying and from the treatment of mineral as shown by DG XI's invitation to tender published in OJ S 236, 5.12.1998.

WWF considers that the following action is needed at the EU level in order to ensure a high level of protection of human health and the environment, not only from pollution caused by heavy metal spillages from tailings lagoons such as occurred in Doñana, but also from chronic metal pollution from tailings lagoons leakages and abandoned mines.

¹ To the Institute for Environmental Studies, Vrije Universiteit Amsterdam (IVM), February 1999

INVENTORY

1. **To ensure** that any study commissioned by the EU in order to assess the management of mining waste includes **the drawing up of a Community-wide comprehensive (public) inventory of:**

- active metal mines including location, quantification and nature of the mining waste produced, and name of the operating company;
- abandoned metal mines including location, quantification and nature of the mining waste remaining in the area;
- (active and abandoned) tailings lagoons including location, quantification and nature of the "contained" waste both in the water (quality) and the sediment, and structural evaluation;
- environmental management measures directed to minimise the impacts of (active and abandoned) tailings lagoons;
- provisions for environmental monitoring in association with tailings lagoons management;
- known spillages and significant leakages from tailings lagoons;
- known chronic and acute pollution levels caused by waste from mining activities;
- areas affected by such pollution.

ACTION PROGRAMME

1. **To develop** and finance a Community Action Programme on "Responsible Mining Waste Disposal", in partnership with the mining industry and environmental organisations, comprising action directed towards:

- assessing the specific environmental and human health risks from tailings lagoons, abandoned mines and waste from metal mining activities in general at the Community level, based on the above-mentioned inventory and taking into account, *inter alia*, the vulnerability of the receiving (wetland) environment;
- drawing up Emergency Plan guidelines, with response measures to be taken by both the mine operators and the relevant authorities in case of accidental spillages, for those sites identified as "high risk" in the above-mentioned assessment. These plans should also include an outline of possible long-term measures for the restoration of the affected environment;
- research, development and drawing up of EU-wide technical standards on tailings containment (including siting, construction, maintenance and monitoring). These would act as minimum standards for the construction of tailings lagoons. Furthermore, they would also be a reference for assessing the environmental impact resulting from the location and method of tailings disposal from quarries, opencast mining etc.
- developing criteria for "safe" mine closure phases including safe disposal of any remaining waste, rendering (decommissioning) of tailings lagoons etc.;
- remediation and environmental rehabilitation measures at (active or abandoned) mines where, *inter alia*, EU-wide technical standards on tailings containment are not met and/or where vulnerable environments are threatened. This should include the abatement of acid mine drainage from old metal mining activities;
- evaluation and promotion of metal mining processing and waste disposal methods with lower pollution risks than tailings lagoons, such as *re-emplacement of mining waste in the mine void*. This method requires long-term planning, but may only result in waste (tailings) disposed on the surface on a temporary basis until the staging of the mining process allows for it to be placed "back" into the mine.

EVALUATION AND A NEW SET UP

1. **To evaluate** why existing Community measures have not been successful in preventing pollution accidents/incidents from tailings lagoons, etc. and why there are so many differences at the Member State level regarding the management of mining waste. The main Community (direct and indirect) tools to prevent this type of accidental pollution are illustrated below in the context of the Doñana incident.

- **Framework Directive on Waste.** From the outset, it needs to be made clear that Council Directive 91/156/EEC² on waste covers mining waste. There is a confusing reference in Article 2 to the exclusion of mining waste from the scope of the directive "(...) where [it is] already covered by other legislation". However, there is no (other) specific EU legislation on mining waste, hence the directive does in fact apply to this type of waste. Furthermore, "*residues from raw material extraction and processing*" (i.e. tailings) are included under the "waste categories" listed in Annex I to the directive, and "*surface impoundments*" (i.e. mine tailings lagoons) are one of the waste "disposal operations" listed in Annex II.

The key point to make is that the Framework Directive on Waste requires in Article 4 that Member States dispose of "*waste without endangering human health and without using processes or methods which could harm the environment, and in particular without risk to water, air, soil and plants and animals, and without adversely affecting the countryside or places of special interest*".

Spanish legislation has not been appropriate in relation to requiring enterprises to dispose of their waste in the correct manner, because of lack of transposition of the 1991 Framework Directive on Waste. Accordingly, the European Commission brought a case against Spain at the European Court of Justice. Last autumn the Spanish authorities informed the Commission that the 1991 Framework Directive on waste had been transposed on 21 April 1998 (to be effective 10 days later). *The Doñana incident happened on 25 April 1998...*

- **Environmental Impact Assessment (EIA).** Council Directive 85/337/EEC³ on the assessment of certain public and private projects on the environment, as last amended by Directive 97/11/EC⁴, requires the assessment of the impact resulting from the location and methods of tailings disposal from quarries, open-cast mining etc. However, there are no EU-wide standards for tailings containment and so each country has its own procedure.

The Boliden mine "Los Frailes" was subject to an EIA as shown by the official bulletin of the Seville province of 5 August 1995. *The EIA did not stop the accident from happening.* Furthermore, and despite concern expressed *inter alia* by several MEPs in the form of questions to the European Commission, mining activities at "Los Frailes" have now re-started. The Spanish authorities on the basis of another EIA, which was heavily criticised by Spanish environmental NGOs⁵ in general and WWF in particular, have allowed this to happen. It appears that such an EIA is in breach of the Spanish regional EIA Regulation for the Andalusian Autonomous Community, given that: a) lacks a global assessment of the overall impact of the project, and b) lacks consideration of alternative proposals for a "cleaner production" at the site. It appears that the Spanish authorities did not make sure that all the elements for an EIA were included in the evaluation. *They seem to be getting away with it...*

- **Nature conservation.** [Habitats and Birds Directives]. Council Directive 92/43/EEC⁶, on the conservation of natural habitats and wild fauna and flora, aims at ensuring conservation of threatened habitats and species in the Community by establishing the Natura 2000 ecological network.

² OJ no L 78, 26.3.1991

³ OJ no L175, 5.7.1985

⁴ OJ no L 73, 14.3.1997

⁵ SEO/Birdlife, Greenpeace, WWF/Adena and "Ecologistas en Acción" submitted written comments to the provincial government of Sevilla against the request by Boliden Apirsa S.L. for a re-opening authorization

⁶ OJ no L 206, 22.7.1992

The Doñana wetland area belongs to the Natura 2000 network since part of it has been designated as a Special Protected Area (SPA) under the Birds Directive⁷. In addition, the whole area (beyond current demarcations as Natural Park and National Park) will be designated as a Special Area for Conservation (SAC). This means that Article 6 of the Habitats Directive has applied since 1994, requiring *"Member States to avoid the deterioration of natural habitats and the habitats of species as well as disturbance of the species for which the areas have been designated"*. This latter provision can only be achieved by ensuring that activities inside and outside a Natura 2000 site are in compliance with the conservation objectives agreed for the site. Article 6 also requires that any developments outside a Natura 2000 site *"to have a significant effect on the (protected) site"* are subject of a specific EIA of their implications for the nature conservation objectives of the site.

None of this seems to have been taken into consideration in the case of the Boliden mine "Los Frailes" which opened in December 1995, over one year after the entry into force of the Habitats Directive in Spain. This could be because of its perceived relative distance (50 km) to known protected sites such as the "Marismas del Guadalquivir", which has not been an obstacle for this site to be subject of, first, chronic heavy metal pollution and, after the accident, of very serious acute heavy metal pollution. The new EIA carried out in view of the re-start of mining activities at "Los Frailes" contains some considerations on nature conservation, but was not carried out from the long-term perspective of achieving the nature conservation objectives of the protected site.

The Habitats Directive also lays down requirements for the protection of endangered species. In particular, Article 12 requests that *"Member States take measures to establish a system of strict protection for the animal species listed in Annex IV in their natural range prohibiting deterioration of breeding sites or resting places"*.

The Doñana wetlands are the natural range and both a breeding site and a resting place for several endangered species of animals such as the Iberian lynx, the Imperial eagle, certain fish and several migrating birds such as the black stork, the flamingo etc. A system for the strict protection of these species should not allow mining activities taking place at locations within and/or with influence on their natural range, unless they are developed in an appropriate manner ensuring that no damage to habitats or species will occur. Doñana is an especially sensitive wetland system where bodies of water are inter-connected, and where persistent and bioaccumulative pollution from heavy metals could affect whole populations of key species.

- **Structural Funds.** Since some metal mining operations can be partially financed under the Structural Funds, it is necessary to monitor Council Regulation (EC) No 1260/99 and all revisions, on the tasks of the Structural Funds and their effectiveness and on co-ordination of their activities etc. This Regulation requests in Article 12 (compatibility) that *"Operations financed by the Funds (...) shall be in conformity with the provisions of the Treaty, with instruments adopted under it and with Community policies and actions, including (...) on environmental protection and improvement"*. In addition, Article 38 (on financial control) states that *"the Commission, after due verification, may suspend all or part of an interim payment if it finds that the expenditure concerned is linked to a serious irregularity which has not been corrected and that immediate action is needed"*.

The European Regional Development Fund (20.75 MECU) was used (1994-1999) to co-finance operations in the Boliden mine "Los Frailes", despite what was stated in Article 7 of Council Regulation (EEC) No 2981/93 which was the one applying at the time (equivalent to Article 12 of the current Regulation, above). The funding was "frozen" in accordance to Article 24 of Council Regulation (EEC) No 2982/93 after the disaster (having received 9.71 MECU by 1997) thanks to the intervention of the European Commission (equivalent to Article 38 of the current Regulation, above). However, the Spanish authorities have reinstated this funding under pressure from the mining company Boliden. The Commission should not allow the continuation of this funding until it has all the elements (see above) to carry out a comprehensive environmental and human health risk assessment from the mining activity at "Los Frailes", and to monitor its development in order to make sure that "taxpayers" money is used adequately.

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Directive 79/409/EEC on the conservation of wild birds, OJ no L 103, 25.4.1979

2. To set up a Community legislative framework that can *effectively* protect human health and the environment from pollution resulting from mining activities. This "mining waste management" framework should exploit the opportunities offered by the above-mentioned legislation, and by other existing EU environmental legislation in the areas of waste and control of major accident hazards. However, legislative measures in these latter areas need to be revised so that they can *actually* offer such protection as follows:

- Hazardous Waste List (Council Decision 94/904/EEC⁸ establishing a list of hazardous waste pursuant to Article 4(1) of Council Directive 91/689/EEC⁹ on hazardous waste). To include mining waste (i.e. *"waste resulting from exploitation, mining, dressing and further treatment of minerals and quarry"*) in the list under the same categories/headings featuring in the "European Waste Catalogue"¹⁰, in order to achieve more stringent requirements for the disposal of this type of waste. This inclusion is currently under consideration as shown by the Commission's working document on the "proposal to amend the European Waste Catalogue including revisions to the Hazardous Waste List". *The inclusion is necessary in order to increase the protection currently offered by Community legislation with regards to pollution resulting from mining activities.*
- SEVESO II Directive (Council Directive 96/82/EC¹¹ on the control of major-accident hazards involving dangerous substances). To extend the scope of the directive - when it is next revised - in order to include *"the activities of the extractive industries concerned with exploration for, and the exploitation of, minerals in mines and quarries and by means of boreholes"* (now specifically excluded as shown in Article 4(e)). This inclusion would put in place a whole set of measures directed to prevent major tailings lagoons spillages and limit their consequences, including emergency plans, information to and consultation of the public, land-use planning, inspections, and administrative co-operation.

A key point to make is that information on major accidents from mining installations is not readily available. However, if mining activities were included in the SEVESO Directive the public will have more rights in terms of access to information as well as in terms of consultation. Thus under this directive, operators as well as public authorities have certain obligations to inform the public, not only on incidents/accidents but also in other areas. Furthermore, this information has to be both passive (permanent availability of information) and active (pro-active, i.e. brochures etc). *Therefore, the inclusion of mining activities in the SEVESO Directive is necessary not only to prevent tailings lagoons spillages and limit their consequences, but also to breach the current lack of information on incidents involving tailings lagoons.*

3. A legislative framework on "mining waste management" should also **make use of relevant measures from Community environmental legislation, which are now in the pipeline** in relation to water protection and environmental liability. However, care needs to be taken that proposed measures in those areas should actually offer the necessary protection against pollution resulting from mining activities, as follows:

- Draft Water Framework Directive¹². This draft Directive (currently being discussed in conciliation by the European Parliament and the Council) establishing a framework for Community action in the field of water policy - the Water Framework Directive - is long overdue and has been welcomed by all EU bodies. It requires a river basin (catchment) approach to planning for "good water (qualitative and quantitative) status". In view of the Doñana incident, it is clear that this river basin approach needs to be reflected in all other relevant environmental legislation. Thus, for example, the environmental risks from waste from mining activities should be assessed from the point of view of their overall impact on the river basin where the mining activity would be carried out.

⁸ OJ no L 356, 31.12.1994

⁹ OJ no L 377, 31.12.1991

¹⁰ OJ no L 5, 7.1.1994

¹¹ OJ no L 10, 14.1.1997

¹² Commission proposals: COM(97) 49 final, COM (97) 614 final and COM(98) 76 final

Member States have to draft river basin management plans for achieving "good water status" to a set timetable, on the basis, *inter alia*, of a review of the environmental impact of human activity within each river basin district. *This review should necessarily include estimations of point source pollution from mining activities, and should also identify potential sources of accidental, chronic pollution such as tailings lagoons leakages. In the case of mining activities and "protected areas" for the conservation of habitats and species occurring within the same river basin, the monitoring programmes to be established by Member States should always be supplemented in order to monitor the extent and nature of any pollution arising from the mining.*

The draft WFD prohibits direct discharges of pollutants into groundwater subject to certain provisions. Those mean that **Member States**¹³ may authorise, specifying the conditions for, re-injection into the same aquifer of pumped groundwater from mines and quarries (Article 13(3g)). *The conditions for this type of re-injection should provide for consideration of the need to require prior treatment of the water that is to be re-injected, so as not to compromise the environmental objectives established for the groundwater body or associated surface waters.*

- White Paper on Environmental Liability. This long-awaited paper setting up a Community environmental liability regime has to be welcomed, although reserve has also to be expressed that its objectives might have been weakened compared to earlier drafts. In relation to "contaminated site cases" (one of the types of environmental damage covered), the regime applies to damage caused by "dangerous activities" which are covered by specific Community legislation only. As there is no specific EU legislation on mining waste and in view of the Doñana incident and others involving metal mining waste, the regime should be amended to include "metal mining activities involving the use of tailings lagoons". Furthermore, wording such as "significant", relating to damage, or "serious", relating to threats to human health or the environment, needs to be carefully translated into quantitative terms from the perspective of the damage to the affected site itself, and not from a overall, global perspective (i.e. local, regional, national or EU).

This is restrictive and inconsistent with the "Habitats Directive". Thus, Article 12 of this Directive provides protection to habitats and species (biodiversity) outside Natura 2000 sites. In addition, Article 6 of the Directive specifically asks to consider the effects of developments taking place outside a Natura 2000 site on the conservation objectives of the site (see above). Furthermore, there is also inconsistency with other Community legislation and commitments resulting from ratification of International Conventions; e.g. the Bern Convention which provides protection for ALL the species and their habitats listed in its Appendixes.

In conclusion, a binding EU environmental liability regime needs to be set up as soon as possible covering all types of activities and all types of damage (biodiversity, contamination of sites and traditional damage), regardless the conservation status of the areas where the damage occurs and allowing for all those exercising control of the activity (operator or operators) to be made liable.

IMPLEMENTATION AND ENFORCEMENT

1. **To ensure** that implementation of existing legislation on nature conservation such as the Birds and the Habitats directives is not only speeded up, but also carried out in an efficient and correct manner by the Member States in order to obtain a coherent Community ecological network of habitats (Natura 2000), and hence what will constitute the main instrument safeguarding biodiversity at the Community level. Thus, to be able to identify vulnerable sites - from a nature conservation point of view - within the catchment area of existing and proposed mining sites is vital for the assessment of the environmental risks from metal mining activities, and also to stimulate preventative and remedial action.
2. **To guarantee** that enough human and financial resources are deployed for monitoring and enforcing the implementation of the relevant Community environmental legislation at the national level in order to guarantee its actual efficacy in protecting human health and the environment from pollution

¹³ As above, this will be up to national law, and is a case of "permitted" pollution (rather than "accidental"), but is still worth mentioning it here

resulting from mining activities. This implies, *inter alia*, that the "legal unit" within DGXI of the European Commission should have the technical/specialised staff necessary not only to assess whether the legislation has been properly implemented, but also to carry out *in situ* inspections where necessary (i.e. complaints, infringement procedures etc).

ENLARGEMENT AND FUTURE ISSUES

1. **To ensure** participation from accession countries in any EU action carried out to protect human health and the environment not only from pollution caused by heavy metal spillages from tailings lagoons such as occurred in Doñana, but also from chronic metal pollution from tailings lagoons leakages and abandoned mines. This would involve the extension of any action work following the suggestions made here (i.e. Inventory, Action Programme etc.) to include these countries.
2. **To consider** broadening the scope of any action work following the suggestions made here for metal mining waste (i.e. Inventory, Action Programme etc.) to include other comparable waste such as waste from the fertiliser industry, in view of the similarities in storage and disposal methods, and also of recent incidents such as the breached slurry lagoon at Huelva, Spain, on 1 January 1999.
3. **To try to ensure** that any standards developed at EU level are transferred to mining activities elsewhere in the world, for instance that they are incorporated in any Community development assistance associated with mining.