



Human Rights Council

Twenty-first session

Agenda item 3

**Promotion and protection of all human rights, civil,
political, economic, social and cultural rights,
including the right to development****Report of the Special Rapporteur on the human
rights obligations related to environmentally
sound management and disposal of hazardous
substances and waste, Calin Georgescu***Summary*

In the present report, the Special Rapporteur focuses on the adverse effects on the enjoyment of human rights of the unsound management of hazardous substances and waste used in and generated by extractive industries.

Section II of the report provides information on the various methods of extraction that use hazardous chemicals and current practices in waste management; while section III explores the adverse impact on human rights of the improper management of hazardous substances and waste. Section IV discusses emerging issues in extractive industries, which aggravate or contribute to exposing humans to hazardous substances and waste. In section V, the Special Rapporteur sets out the international normative framework for the sound management of hazardous chemicals and waste, before submitting his conclusions and recommendations in section VI.

Contents

	<i>Paragraphs</i>	<i>Page</i>
I. Introduction	1	3
II. Management and disposal of waste from extractive industries	2–19	3
A. Scope and definitions	2–4	3
B. Extraction of resources - current practices.....	5–9	4
C. Waste management practices in extractive industries.....	10–19	5
III. Human rights impact of hazardous substances and waste from extractive industries	20–42	7
A. Rights to adequate health and life	21–33	7
B. Right to adequate food and nutrition	34–36	10
C. Right to a safe and healthy working environment	37–38	11
D. Right to safe drinking water and adequate sanitation	39–40	11
E. Right to the enjoyment of a safe, clean and healthy sustainable environment	41–42	12
IV. Emerging issues in extractive industries	43–52	12
A. Child exploitation	44–46	13
B. Environment defenders	47–48	13
C. Transnational corporations and other businesses	49–50	14
D. Militarization of extractive industries	51–52	14
V. Normative framework	53–67	14
A. Environment conventions	53–60	14
B. International Labour Organization conventions	61–64	16
C. Non-binding international agreements	65–67	18
VI. Conclusions and recommendations	68–71	19

I. Introduction

1. The present report, submitted in accordance with Human Rights Council resolution 18/11, focuses on the adverse effects on the enjoyment of human rights of the unsound management and disposal of hazardous substances and waste used in and generated by extractive industries.¹

II. Management and disposal of waste from extractive industries

A. Scope and definitions

2. The present report focuses on the management and disposal of substances and wastes in the extraction of energy sources such as coal, uranium, oil shale and tar sands; precious metals such as gold and silver; industrial metals such as iron, mercury and bauxite for aluminium production; rare-earth metals; and asbestos.² Furthermore, the report highlights the human rights implications associated with the extraction of these resources, but does not address the additional and equally substantial implications arising from the industrial conversion or downstream use of extracted resources.

3. For the purposes of this report, extractive industries are defined as those which remove a natural resource from its natural surroundings for industrial purposes without provision for their renewal in a socially, economically or environmentally viable timeframe. This definition can embrace both traditional extractive industries, such as the extraction of minerals, oil and natural gas, and biological resources and water.³ Other definitions recognize that extractive industries may include a range of resources, living and non-living, renewable and non-renewable, with their categorization as extractive depending on whether they exhibit economically significant rates of regeneration.⁴

4. The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal defines hazardous substances and wastes to include those that are toxic, ecotoxic, poisonous, explosive, corrosive, flammable and infectious. We can also add those with radioactive qualities to the list. The present report applies these properties to both substances and wastes used in and produced by extractive industries. For the purpose of this report, hazardous wastes are hazardous substances that are disposed of or created by abandonment on land or in water, emission into the atmosphere or underground storage. Additionally, hazardous substances that comprise oil and gas reserves or the vapours of elemental mercury from cinnabar extraction, as well as dust of extracted resources, such as coal and asbestos, are considered here as hazardous substances and not hazardous wastes.

¹ The Special Rapporteur wishes to thank the Chemicals Branch of the United Nations Environment Programme (UNEP) for the information provided during the preparation of the present report.

² The extraction of all metals and minerals is not considered in this report; it was felt that those cited are broadly representative of hazardous substances and wastes associated with the mining industry that have general human rights implications.

³ See United Nations Interagency Framework Team for Preventive Action, "Extractive Industries and Conflict: Guidance Note for Practitioners," (2010), p. 4; Economic and Social Council, "Study on indigenous peoples and corporations," Note by the Secretariat (E/C.19/2010/1), para. 1; and Andres Liebenenthal, Roland Michelitsch and Ethel Tarazona, *Extractive Industries and Sustainable Development: An Evaluation of the World Bank Experience* (Washington, D.C., World Bank, 2005).

⁴ See F.M. Peterson and A.C. Fisher, "The Exploitation of extractive resources: A survey," *The Economic Journal*, vol. 87, No. 348 (December 1977), p. 681.

B. Extraction of resources - current practices

5. Mining for the extraction of resources generally fall within two categories of activities: excavation and beneficiation. Each of these activities generates its own waste stream and management issues. Excavation techniques entail surface, underground and solution mining. Underground (or sub-surface) mining involves the construction of tunnels or shafts to reach buried ore deposits, and can extend several miles underground. Solution mining (or in situ, leaching or recovery) involves the injection of a liquid (e.g. water, sulphuric acid, nitric acid, hydrogen peroxide or carbonates) leaching solution into porous rock through a borehole to dissolve the desired resource.

6. Around the world, underground mining is the method most commonly used for coal extraction. The use of solution mining techniques for uranium has been increasing, up from approximately 36 per cent in 2009 to 41 per cent in 2010. While the use of solutions may have a less destructive impact on the surface ground, these toxic and hazardous substances bring with them chemical management challenges related to their use, distribution, storage and disposal.

7. Beneficiation refers to the variety of processes, used to separate desired resources from material of no commercial use. The methods of primary concern for the scope of this report are the chemical processes involving cyanide leaching and mercury amalgamation. The predominant method used to beneficiate gold ore and other metals is cyanide leaching. This technique uses aqueous solutions of sodium or potassium cyanide as leaching agents (lixiviants) to extract the desired metal from the ore. In the amalgamation of gold, metallic gold is wetted with mercury to form a solution of gold in mercury. The amalgam is later roasted in open air, releasing elemental mercury emissions into the atmosphere. Artisanal and small-scale gold mining (ASGM or ASM), supplying an estimated 13 per cent of the world gold production, is the largest demand sector for mercury globally.⁵ Another process that uses chemicals is the Bayer process for the beneficiation of bauxite for recovery of alumina to be used in aluminium production.

8. Hydraulic fracturing may be used to enhance or enable the recovery of oil and gas, and it is the process by which a mixture of water, sand and chemicals is injected into a well at high pressure to create fractures in geological formations, thereby collapsing small pockets of oil and gas into larger reserves for enhanced recovery. The excess water from oil or gas production (produced water) and drilling fluids constitute hazardous wastes and are sometimes re-injected into the reservoir. In some countries where the practice is not banned, produced water is disposed of in waste ponds, which may not be lined with impermeable barriers, or even dumped directly into streams or oceans.

9. A controversial source of fossil fuel is "oil shale," a sedimentary rock that contains solid kerogen, which can release oil and gas when heated. Extraction may be through surface mining or by the in situ method. Waste materials remaining after the extraction of shale oil and tar sands are not unlike the waste of mining activities, including spent rock, hazardous solids and toxic solutions. Tar sand production is similar to developing oil shale. To bring extracted oil and gas to refineries for processing, pipelines requiring access routes are used on land, underground, or below the sea and can break, leak or explode, allowing oil or gas to spill out and seep into aquifers and other freshwater resources.⁶ In addition, thousands of tankers are used to transport at least half of the oil produced offshore.

⁵ United Nations Environment Programme (UNEP), *Environment for development perspectives: Mercury use in ASGM*, (Geneva, 2011).

⁶ See Paul R. Epstein and Jesse Selber, eds., *Oil: A Life Cycle Analysis of its Health and Environmental Impacts*, Centre for Health and the Global Environment Harvard Medical School (2002), p. 21.

C. Waste management practices in extractive industries

10. The greatest volume of waste generated by mining activity is waste rock, which is often reactive. Overburden is also a significant waste, particularly with surface mining techniques. Wastes may be disposed of in surface heaps or underground. Other wastes include drilling mud, cuttings and water used during excavation, which may be directed into lined or unlined pits. The principal waste generated by beneficiation is the solid, liquid and/or gaseous residue left over after the process of separating the desired resource from the undesired fraction. These residues are commonly referred to as tailings, but also known as mine dumps, slimes, tails, refuse, leach residue or slickens. Each resource extracted through mining techniques will have its own tailings composition, which varies depending on the location and purity of the desired resource.

11. There are many techniques for the waste management of tailings and red muds. Despite well-documented environmental impacts, disposal in oceans (submarine tailing disposal or STD), rivers or streams (riverine tailing disposal or RTD) is still considered an option by some countries.⁷ In 2003, the World Bank reported that the practice of RTD was being phased out due to the well-documented negative consequences on surrounding environments, and that STD was the waste-disposal procedure “preferred by many mining companies planning large-scale operations in mountainous areas of active seismicity, particularly in Southeast Asia and the Pacific.”⁸

12. Ponds are used to dispose of process water or other solutions that are unsuitable for discharge or inappropriate for addition to tailings impoundment. Settling ponds are employed at in situ mining operations to remove radium and/or other toxic substances from solution prior to discharge. Deep disposal wells are sometimes used to dispose of wastes that cannot be recycled, treated or discharged (e.g. brines, laboratory wastes, etc.). Another form of disposal is the mixture of a certain quantity of tailings with excavation waste and cement, creating a product that can be used to backfill underground voids. The previous mandate holder examined the practice of dismantling ships laden with hazardous material in his thematic report on shipbreaking (A/HRC/12/26).

13. Land application areas are also used to eliminate water generated in the bleed solution during extraction, particularly in solution mining. Beneficiation wastes generated by solution operations of uranium mining may also be shipped to waste disposal facilities. Phytostabilization uses plants for long-term stabilization and containment of tailings, by sequestering pollutants in soil near the roots, which may reduce the bio-availability of pollutants and exposure by livestock, wildlife and humans. When leaks or spills occur in the marine environment, chemical dispersants may be used to help mitigate the impact of oil spills. In the case of the Deepwater Horizon oil spill in the Gulf of Mexico, over 650,000 gallons of dispersant were applied at the surface and underwater. These chemical dispersants, however, may not degrade as intended and warrant consideration as a waste of oil and gas extraction. For example, research has shown that dioctyl sodium sulfosuccinate (DOSS), a component of a dispersant recently used to assist in the remediation of the Deepwater Horizon oil spill, was present as a large plume 200 miles from the wellhead five

⁷ OECD Global Forum on Environment, “Focusing on Sustainable Materials Management,” Materials Case Study 2: Aluminum (2010), p. 17; see also Freeport-McMoRan Copper & Gold Inc., *Controlled Riverine Tailings Management at PT Freeport Indonesia* (Papua, 2009).

⁸ World Bank Group and Extractive Industries, *Extractive Industries Review, Striking a Better Balance*, The Final Report of the Extractive Industries Review, vol. I (December 2003), p. 31 (according to the report, in 2003, only three mines in the world, all on the island of New Guinea, still used riverine tailing to dispose of mine wastes).

months after use, indicating limited efficacy and unanticipated levels of exposure for aquatic life.⁹

14. Toxic substances in fracking fluids and resulting mud can be released into the surface water during the extraction, transport, storage and waste disposal stages. The storage of wastewater and other waste products may result in further contamination of water supplies due to spills, leaks and/or floods. These unintended releases can reasonably be expected to increase following the anticipated increase in the frequency and intensity of storms in the future, due to climate change.

15. Slurries and other solutions used or produced by extractive industries are commonly kept in impoundments, ponds or injected underground, from where, the waste is likely to leach arsenic, barium, mercury, lead, manganese, aluminium, chromium and other toxic substances into groundwater and private wells. Waste constituents of concern include radionuclides, such as lead, radium, radon and thorium; heavy metals, such as mercury and cadmium; other leaching agents, such as cyanide, sulphuric acid, arsenic; and sludge from evaporation ponds

16. In some instances, after the mining activity has been terminated, the mine water collected in abandoned pits, underground workings and aquifers contains radionuclides. The tailings from uranium extraction contain all the constituents of the ore, including 85 per cent of the initial radioactivity of the ore and 5 to 10 per cent of the uranium initially present in the ore. The decomposition of residual uranium in waste produces radon, an airborne, radioactive substance that can easily contaminate buildings, such as homes, schools and offices. The sludge also contains heavy metals and other contaminants, such as arsenic, as well as chemical reagents used during the milling process. Examples from around the world reveal a massive 30 million to 86 million tonnes of solid tailings from uranium mining operations in ponds or piles, per location.¹⁰

17. Gold cyanidation processes result in huge ponds of cyanide-laced waste, a major point source of cyanide release into groundwater. Over 30 large-scale accidental releases of cyanide into water systems have been reported since 1975, as a result of dam-related spills, transportation accidents and pipe failures. The catastrophic cyanide spill in Baia Mare, Romania, in 2000, affected the drinking water of 2.5 million people and the livelihood of over 1.5 million who depended on tourism, agriculture and fishing along the Tisza River in Hungary, Romania and Yugoslavia. Scientists estimate that it will take 10 to 20 years for most river life to return to the affected rivers. Many communities have voiced their concern over health effects suspected to be linked to cyanide contamination of the groundwater.

18. Exposed surfaces and waste rock in impoundments and ponds, or buried underground, can react and create new and additional waste from excavation and beneficiation, which can contaminate the surrounding surface and groundwater. Acid mine drainage (AMD), or acid rock drainage (ARD), is a highly acidic solution formed when sulfide-containing material is exposed to oxygen and water. When the acidic solution is carried into local surface waters or leaches into the groundwater, the loss of an aquifer or stream as a source of drinking water may result. The presence of cyanide in waste enables the solubility of heavy metals, such as mercury, arsenic, lead and other toxic metals, in water, exacerbating the impacts of these contaminants.

⁹ Elizabeth B. Kujawinski and others, "Fate of Dispersants Associated with the Deepwater Horizon Oil Spill," *Environmental Science and Technology*, vol. 45 (2011), pp. 1298–1306.

¹⁰ Peter Diehl, "Uranium Mining and Milling Wastes: An Introduction," WISE Uranium Project, (last updated 18 May 2011). Available at <http://www.wise-uranium.org/uwai.html>.

19. Similarly, the red mud created as a waste product of alumina extraction can contain metals such as arsenic, beryllium, cadmium, chromium, lead, manganese, mercury, nickel and naturally-occurring radioactive materials, such as thorium and uranium. Red mud is also caustic or alkaline, with a pH of 13 or higher. In 2010, the collapse of a red mud pond of an alumina refining plant in Ajka, Hungary, killed four, and injured 120 people, damaged bridges and houses, and forced the evacuation of hundreds of people. Riverine tailings of the mine overflowed the river banks downstream contaminating groundwater and surface water. The Special Rapporteur is pleased to have received an invitation from the Government of Hungary to assess the impact of the accident on the human rights of the people in the area. The findings of the assessment will be presented to the Human Rights Council in September 2013.

III. Human rights impact of hazardous substances and waste from extractive industries

20. Extractive activities typically result in the introduction of hazardous substances into the natural environment, which may or may not be the desired resource, with impacts to human health, the environment, and society. The impacts of hazardous substances and waste on human life may occur through various path of exposure, such as inhalation (mining dust, elemental mercury and hydrogen cyanide), ingestion (food and water), and physical contact with chemicals.

A. Rights to adequate health and life

21. The unsound management of hazardous substances and waste from extractive industries contributes to overall environmental pollution which may have serious effects on the right to health and the right to life. For example, the decomposition of residual uranium in waste produces radon, an airborne radioactive substance which, in some countries, is the second most important cause of lung cancer after smoking.¹¹ Workers in the extractive industry are particularly exposed to the health risks related to the management of hazardous substances and waste. Indeed, in the case of radon pollution, more significant health effects have been found among uranium miners who are exposed to high levels of radon.

22. A well-known and potentially fatal respiratory disease particularly affecting extractive industry workers is coal worker's pneumoconiosis, or black lung disease, which causes the lungs to inflame and stiffen from scarring. Another potentially fatal outcome of exposure to coal dust is silicosis.¹² Disturbingly, up to 12 per cent of coal miners develop these two deadly diseases¹³. Communities and people living in proximity to areas with heavy coal production have been observed to have poorer health and a higher risk of cardiopulmonary disease, chronic lung disease, hypertension and kidney disease¹⁴ than the rest of the population. The dangers of asbestos, a known carcinogen, have been documented

¹¹ World Health Organization (WHO), "Radon and cancer," Fact sheet No. 291 (updated September 2009). Available at <http://www.who.int/mediacentre/factsheets/fs291/en/index.html>.

¹² See E.F. Wouters, T.H. Jorna and M. Westenend, "Respiratory effects of coal dust exposure: clinical effects and diagnosis," *Experimental Lung Research*, vol. 20. (1994), pp. 385–394.

¹³ Carolyn Stephens and Mike Ahern, *Worker and Community Health Impacts Related to Mining Operations Internationally: A rapid review of the literature*, IIED, No. 25 (November 2001).

¹⁴ Michael Hendryx and Melissa M. Ahern, "Relations Between Health Indicators and Residential Proximity to Coal Mining in West Virginia," *American Journal of Public Health*, vol. 98, No. 4 (April 2008), pp. 669–671.

since the early 1900s. Oil is another example of a desired, but hazardous substance; the toxic constituents of petroleum are frequently spilled, directly or indirectly, into surface water and groundwater, with deadly or otherwise devastating effects on human health.¹⁵

23. Communities in one country alleged that a foreign energy company had failed to notify them after numerous oil spills had occurred, and that children, women and men continued to bathe, fish and drink in their primary water source, which was contaminated with crude oil. A complaint was filed with the Compliance Advisor/Ombudsman of the World Bank Group's International Finance Corporation (IFC) by the communities, alleging that the energy company had committed human rights abuses by forcing the members of the communities to clean up the oil spill without training or protective equipment.¹⁶

24. Transportation of hazardous substances used in extraction also carries potential risks. For example, there have been several transportation-related incidents resulting in serious injuries and deaths from exposure to cyanide.¹⁷ Documented effects of cyanide include loss of capacity by neurons to send signals throughout the body, including the brain (demyelination), lesions of the optic nerve, ataxia, hypertonia, Leber's optic atrophy, goitre, and depressed thyroid function.

25. Despite increasing global consensus of the dangers of mercury, the Special Rapporteur is concerned that miners and their families are still exposed to this hazardous substance and neurotoxin; miners in Brazil, Colombia, Guyana, Indonesia, the Philippines, United Republic of Tanzania and Zimbabwe having mercury levels of up to 50 times above the limits set by the World Health Organization (WHO).¹⁸ Inhalation of mercury vapour can produce harmful effects on the nervous, digestive and immune systems, lungs and kidneys, and may be fatal. Symptoms include tremors, insomnia, memory loss, neuromuscular effects, headaches, cognitive and motor dysfunction. Mild subclinical signs of central nervous system toxicity can be seen in workers exposed to an elemental mercury level in the air of 20µg/m³ or more, for several years. While there is no conclusive evidence linking mercury exposure to cancer, the rate of lung cancer mortality among gold miners is particularly high.¹⁹

26. A recent study by the National Institute for Occupational Safety and Health (NIOSH) and the National Cancer Institute of the United States of America shows a direct relationship between diesel exhaust and lung cancer.²⁰ Underground miners are already exposed to over 100 times the background concentrations of diesel exhaust, and the use of diesel-fuelled equipment is growing in the mining community. Not surprisingly, the study found that underground miners, who have the greatest exposure to diesel exhaust, have a

¹⁵ UNEP, *Environmental Assessment of Ogoniland* (Nairobi, 2011), pp. 37-40.

¹⁶ Complaint to the Compliance Advisor/Ombudsman (CAO) of the International Finance Corporation, World Bank Group, by the Shibibo-Konibo indigenous villages of Canaán de Cachiyacu and Nuevo Sucre, Peru, dated April 6, 2010. Available at http://www.cao-ombudsman.org/cases/document-links/documents/MapleCAOComplaint_English_April2010.pdf.

¹⁷ T.I. Mudder and M.M. Botz, "Cyanide and society: a critical review," *The European Journal of Mineral Processing and Environmental Protection*, vol. 4, No. 1 (2004) p. 69.

¹⁸ UNEP, *Environment for development perspectives: Mercury use in ASGM*, (Geneva, 2011).

¹⁹ Armando Valenzuela and Kostas Fytas, "Mercury Management in Small-Scale Mining," *International Journal of Mining, Reclamation and Environment*, vol. 16, No. 2, (2002-03), p. 14.

²⁰ See National Institute for Occupational Safety and Health (NIOSH), "Diesel Exhaust." Available at <http://www.cdc.gov/niosh/mining/topics/topicpage2.htm>.

higher lung cancer mortality rate than surface miners, as well as elevated oesophageal cancer and pneumoconiosis.²¹

27. The right to health and the right to life are guaranteed in several core international human rights instruments, including the Universal Declaration of Human Rights, the International Covenant on Economic, Social and Cultural Rights and the International Covenant on Civil and Political Rights. Article 12 of the International Covenant on Economic, Social and Cultural Rights recognizes the right of everyone to the enjoyment of the highest attainable standard of physical and mental health, and obliges States to improve “all aspects of environmental and industrial hygiene.” The Committee on Economic, Social and Cultural Rights has dedicated its general comment No. 14 to the realization of this right, while the Human Rights Committee in its general comment No. 6 (1982) underscores the need for States parties to adopt positive measures to address health risks and increase life expectancy in order to promote the right to life.

Impact of hazardous substances from extractive industries on children

28. There is evidence that children are uniquely vulnerable to the effects of mercury.²² Bioaccumulation of methylmercury in fish consumed by pregnant women could lead to neurodevelopmental problems in the developing foetus; and children eating contaminated fish can develop other complications. Trans-placental exposure to such substances is the most dangerous, as the fetal brain is very sensitive. Neurological symptoms include mental retardation, seizures, vision and hearing loss, delayed development, language disorders, reduced IQ and memory loss. One fifth of the children covered by an International Labour Organization (ILO) survey reported having a health problem since they took up gold mining, primarily aches in limbs and backbone, kidney and urinary tract diseases and exhaustion.²³ In one country, over 400 children under the age of five reportedly died due to lead poisoning associated with gold miners grinding lead-containing rock at home in order to extract the gold, and leaving lead dust on the floors where children crawl. Mercury intoxication has been called an epidemic among children working in gold mines, and acrodynia, a disease characterized by red and painful extremities, has also been reported as a result of chronic mercury exposure.²⁴ Furthermore, health risks related to exposure to hazardous substances is exacerbated by children’s inclinations to more hand-to-mouth behaviour as well as the fact that personal protective equipment (PPE) is invariably made in adult sizes.

29. The ILO estimates that one million children worldwide are involved in mining and quarrying, and often with little or no pay; UNEP estimates put that number at between one million and two million. Children as young as 3 years work in dangerous conditions which expose them to hazardous substances, including mercury, lead and cyanide. The mines are often too remote to have regular labour inspections, and they do not have unionized workers, resulting in the so-called “frontier communities” where traditional social structures of society and ethical value systems have broken down.

²¹ See Michael D. Attfield and others, “The Diesel Exhaust in Miners Study: A Cohort Mortality Study with Emphasis on Lung Cancer,” *Journal of National Cancer Institute*, vol. 104, No. 11 (2012).

²² See Susan L. Cutter, “The Forgotten Casualties: Women, Children and Environmental Change,” *Global Environmental Change*, vol. 5, No. 1 (1995), pp. 181-194 (discussing children’s unique vulnerability to toxic substances due to their body size, weight, and development).

²³ International Labour Organization, *Informal Gold Mining in Mongolia: A Baseline Survey Report covering Bornuur and Zaamar Soums, Tuv Aimag*, (Bangkok, 2006).

²⁴ See WHO, *Children’s Exposure to Mercury Compounds* (Geneva, 2010), pp. 51- 55.

30. Article 24 of the Convention on the Rights of the Child stipulates that States parties recognize “the right of the child to the enjoyment of the highest attainable standard of health and to facilities for the treatment of illness and rehabilitation of health.” It further states that States parties “shall strive to ensure that no child is deprived of his or her right of access to such health care services.” In the same vein, article 32 of the Convention provides for States parties to recognize “the right of the child to be protected from economic exploitation and from performing any work that is likely to be hazardous or to interfere with the child’s education, or to be harmful to the child’s health or physical, mental, spiritual, moral or social development.”

Impact of hazardous substances from extractive industries on women

31. Maternal health is severely affected by exposure to hazardous substances, especially during the already immune-challenged gestation period. The Special Rapporteur is alarmed at the discovery of elevated inorganic mercury levels in the breast milk of mothers in several countries. He is concerned that this may diminish the right to life of the infant, reduce the practice of breastfeeding and increase the likelihood for women of diseases associated with exposure to these substances.

32. Artisanal and small-scale mining (ASM) is a demanding, dangerous and often only marginally profitable sector for women; and job opportunities in ASM, even more than larger-scale mining, can increase the burden of work for women both outside and inside the home. In some cases, women experience the impacts of ASM differently, either because of their sex – their biological characteristics as a female –, but more often because of their gender – their sociocultural definition as women.²⁵ For instance, more often than not, it is women who tend the gardens or plots of land and grow the food, and so women are disproportionately impacted by loss or displacement of land. While alternative land may be provided, often it is further away and requires extra work for it to be as productive as the land that was taken away. This adds to women’s work, as they must find the time and energy to tend the replacement land.

33. Article 25, paragraph 2, of the Universal Declaration of Human Rights underscores that “motherhood and childhood are entitled to special care and assistance” under the right to health. Furthermore, article 11, paragraph 1 (f), of the Convention on the Elimination of All Forms of Discrimination against Women provides for “the right to protection of health and to safety in working conditions, including the safeguarding of the function of reproduction.” The Special Rapporteur emphasizes that due to the harmful effects of mercury on the female reproduction function, international human rights law requires States parties to put in place preventive measures and programmes to protect women of child-bearing age from mercury exposure.

B. Right to adequate food and nutrition

34. Due to the disposal of hazardous substances and waste from extraction activities resulting in contaminated agricultural soils, pollution continues even when production stops. Ingestion is another major path of exposure to hazardous substances and waste that has implications on the right to health. Most human exposure to methylmercury is through the consumption of seafood. Methylmercury which is naturally produced from elemental mercury in the environment does not degrade. It bio-accumulates in fish and other organisms, and biomagnifies in larger animals in the food chain, and cooking has no effect

²⁵ World Bank, *Gender Dimensions of the Extractive Industry: Mining for Equity*, Extractive Industries and development Series #8 (August 2009).

on the substance. The right to adequate food, recognized in the International Covenant on Economic, Social and Cultural Rights and other human rights treaties, recognizes the right of everyone to adequate food, not only in terms of quantity but also quality, and free from adverse substances.

35. Toxic waste destroys marine life and reduces biodiversity. Studies have shown that plants uptake uranium,²⁶ and gas flaring, which is sometimes used to remove unwanted gas from crude oil, releases nitrous oxide (N₂O) and sulphur dioxide (SO₂) into the atmosphere, resulting in acidic precipitation, or “acid rain,” that can contaminate surface water and soil. The damage done to soil by acid rain can negatively impact agricultural productivity and decrease the ability of local communities to produce food. Fish stocks in these areas have reduced significantly, creating food scarcity and insecurity for communities who depend on fish as a main source of food, as well as a means of livelihood.

36. Indeed, beyond the provision of food, the environment is also a natural capital from which communities earn a livelihood. Pollution from toxic waste significantly affects sectors, such as agriculture and fisheries, and contribute to the rise in food and commodity prices in mining communities. Furthermore, at the macro-economic level, particularly in developing countries, the prosperity achieved by the mining industry rarely translates into an adequate standard of living for the population. There is clearly a need for strategies to be put in place for benefit-sharing of resources, including the development of multi-sectoral food and nutrition strategies which give special attention to the needs of vulnerable groups.

C. Right to a safe and healthy working environment

37. Mining is considered one of the world’s most dangerous occupations. Workers are exposed to intense heat, toxic substances and fumes, unstable geological structures and intense sounds. Inadequate safety protocols in the handling, storing and disposal of toxic substances is contrary to international human rights treaties protecting the right to safe and healthy working conditions, such as the International Covenant on Economic, Social and Cultural Rights (art. 7) and the Convention on the Elimination of All Forms of Discrimination against Women (art. 11). Indeed, article 11 of the Convention underscores “the right to protection of health and to safety in working conditions, including the safeguarding of the function of reproduction” for women in the field of employment. Moreover, article 12 of Covenant obliges States parties to take steps necessary for “the improvement of all aspects of environmental and industrial hygiene” as well as “the prevention, treatment and control of [...] occupational and other diseases.”

38. Several ILO conventions address the occupational hazards facing workers in extractive industries, as will be discussed in more detail below.

D. Right to safe drinking water and adequate sanitation

39. No other resource is affected by the extent and level of degradation of quality and quantity due to unsound management of hazardous substances and waste from extractive industries than water. As mentioned above, such substances seep, leech and drain into water systems contaminating not only the water reservoirs of the population living in the

²⁶ T.C.S. Murthy, P. Weinburger and M.P. Measures, “Uranium effects on the growth of soybean,” *Bulletin of Environmental Contamination and Toxicology*, vol. 32, No. 1 (1984), pp. 580-586; and P. Soudek P. and others, “Uranium uptake by hydroponically cultivated crop plants,” *Journal of Environment Radioactivity*, vol. 102, No. 6 (2011), pp. 598-604.

immediate area around the mine, but even of the communities living hundreds of kilometres downstream, thereby affecting the fundamental right of access to safe drinking water and adequate sanitation of these communities. Mercury contamination is of particular concern due to its global dispersion. Regarding the quality of water, the Committee on Economic, Social and Cultural Rights, in its general comment No. 15 (2002) on the right to water, emphasizes that water must be “free from micro-organisms, chemical substances and radiological *hazards* that constitute a threat to a person’s health” (para 12 (b)). There are also serious implications on the right to health and the right to life if people use unsafe drinking water. The international framework also provides for the protection of this right for specific groups, including children, women, people living with disabilities and indigenous peoples, with the aim of ensuring that water is available, accessible, safe, acceptable and affordable for all, without discrimination. As recognized in international human rights law, access to water that is free from hazardous substances is not only essential for human health (the right to health) and ensuring livelihoods (right to gain a living from work), but also for the enjoyment of certain cultural practices (right to take part in cultural life), as is often the case for coastal communities and indigenous peoples.

40. Furthermore, due to their use and production of hazardous substances and wastes, extraction industries require massive amounts of water, which can permanently remove billions of gallons of water from the earth’s hydrological cycle. This may infringe on the human right to water by undermining the availability of a sufficient and continuous water supply for personal and domestic uses. Dewatered aquifers and contaminated water supplies may require communities to travel further to collect safe drinking water.

E. Right to the enjoyment of a safe, clean and healthy sustainable environment

41. The unsound management of hazardous substances and waste from extractive industries may cause significant environmental pollution, which in turn negatively impacts a range of human rights. For example, elemental mercury and other heavy metals and toxic substances found in gas reserves are released into the atmosphere during oil and gas extraction processes, while cyanide leaching to extract gold from low-grade ores releases and estimated 20,000 tons of hydrogen cyanide into the atmosphere.²⁷

42. The Special Rapporteur is pleased to observe the growing consensus among States on the right to the enjoyment of a safe, clean and healthy sustainable environment.²⁸ He encourages further studies and consultations on pollution caused by extractive industries, including on the contribution of airborne hazardous substances to global pollution and to the greenhouse effect, the human rights impact thereof, as well as the extra-territorial obligations that arise therefrom.

IV. Emerging issues in extractive industries

43. The following paragraphs give a brief overview of the emerging issues in extractive industries which aggravate or contribute to the impact of hazardous substances on human rights, either directly or indirectly.

²⁷ UNEP/ILO/WHO, “Hydrogen Cyanide and Cyanides: Human Health Aspects,” Concise International Chemical Assessment Document 61 (Geneva, 2004). Available at http://www.inchem.org/documents/cicads/cicads/cicad_61.htm.

²⁸ Human Rights Council resolution 19/10, Human Rights and the Environment.

A. Child exploitation

44. The Special Rapporteur is concerned about the extent of child slavery and child labour in the mining and quarrying industries and the impact on children as they face the same risks as adults, but lack the strength and judgement to protect themselves from sexual, moral, social and physical harm, including death and disabling injuries. Poverty, lack of access to education, insufficient or non-existent legal frameworks, trafficking and debt bondage have been identified as root causes, manifestations and aggravating factors that lead to child slavery in the mining and quarrying sector. The Special Rapporteur observes that unaccompanied minors are more likely to be exposed to harmful substances for want of parental protection in already exploitative environments.

45. International human rights law protects children against child labour, child slavery and other forms of exploitation. Notably, the Convention on the Rights of the Child recognizes the right of the child “to be protected from economic exploitation and from performing any work that is likely to be hazardous or to interfere with the child’s education, or to be harmful to the child’s health or physical, mental, spiritual, moral or social development” (art. 32). The International Covenant on Economic, Social and Cultural Rights underlines that “children and young persons should be protected from economic and social exploitation. Their employment in work harmful to their morals or health or dangerous to life or likely to hamper their normal development should be punishable by law. States should also set age limits below which the paid employment of child labour should be prohibited and punishable by law” (art. 10, para 3). Specific protection against child labour is also provided for in ILO conventions No. 138, concerning Minimum Age for Admission to Employment, and No. 182, concerning the Prohibition and Immediate Action for the Elimination of the Worst Forms of Child Labour.

46. Furthermore, human rights law prohibits all forms of slavery or servitude,²⁹ and a range of other human rights guarantees are aimed at protecting children against exploitation, including those related to health and education. Indeed, one important measure to protect against exploitation is to ensure that children attend school and that they are not denied the opportunity to access education.

B. Environment defenders

47. The Special Rapporteur underlines the importance of upholding the rights of environmental defenders, including their freedom of opinion and right to peaceful assembly, and of addressing impunity. Environment defenders provide critically important oversight on situations of environmental degradation resulting from unsound management and disposal of hazardous substances, which must not be unreasonably controlled or restrained. He expresses concern at the particular vulnerability of women defenders to gender-based violence, particularly in environments that do not encourage the freedom of expression of women, and reminds States of their obligation to protect against such violence.

48. Several communications have been sent to Governments regarding violations against human rights defenders, more specifically environmental defenders, including arbitrary detention, intimidation and killings, in connection with their monitoring of extractive industries, such as mines, oil and petrol extraction, allegedly carried out by State and non-State actors (police, transnational companies, the media, private security guards,

²⁹ See, for example, art. 4 of the Universal Declaration of Human Rights, and art. 28 of the International Covenant on Civil and Political Rights.

paramilitary groups).³⁰ According to information received, journalists who report on environmental issues and the activities of mining companies have also been targeted.

C. Transnational corporations and other businesses

49. In its resolution 18/11, the Human Rights Council mandated the Special Rapporteur to provide information on human rights issues relating to transnational corporations and other business enterprises regarding environmentally sound management and disposal of hazardous substances and wastes (para. 3 (a)). In this regard, the Special Rapporteur is gravely concerned at the practice by transnational corporations of using private security companies to guard key geostrategic sites, and their suppression of legitimate social protest against the unsound disposal of hazardous substances.

50. The Special Rapporteur wishes to remind States and companies alike of the Guiding Principles on Business and Human Rights: Implementing the United Nations Protect, Respect and Remedy Framework, endorsed by the Human Rights Council in its resolution 17/4, that rests on the different but complementary obligations of States and corporations to uphold international human rights standards. While States have a primary duty to protect against human rights abuses by third parties, including business enterprises, corporations have the responsibility to respect human rights, including by identifying, preventing and mitigating adverse human rights impacts linked to their operations. Both parties have a role to play in supporting access by victims to effective remedies, both judicial and non-judicial.

D. Militarization of extractive industries

51. The report (S/2011/738) of the Group of Experts on the Democratic Republic of the Congo³¹ documents the militarization of extractive industries, the illicit exploitation of natural resources and profiteering from a country's mineral sector in order to finance military operations, resulting in environmental degradation, internal displacement, forced labour, health inequities and a decline in livelihoods.

52. The Special Rapporteur encourages more in-depth analysis of the extent to which conflict around the globe is related to the extractive industries sector and of the profit and plunder that diverts a country's economic wealth from the citizenry, denying them their right to benefit from their own natural resources. It is certain that in a climate of violent conflict and disregard for human rights, sound disposal of hazardous substances and safety protocols on the handling of such substances are more likely not to be observed. In such contexts, women and children are usually the most affected.

V. Normative framework

A. Environment conventions

53. The sound management of hazardous chemicals and wastes is addressed globally by three legally-binding conventions: the Stockholm Convention on Persistent Organic Pollutants; the Basel Convention on the Control of Transboundary Movements of

³⁰ See Report of the Special Rapporteur on the situation of human rights defenders (A/HRC/19/55).

³¹ The United Nations Group of Experts on the Democratic Republic of the Congo was established pursuant to Security Council resolution 1533 (2004).

Hazardous Wastes and their Disposal and the Rotterdam Convention on Prior Informed Consent Procedure for Certain Hazardous Chemicals and for Pesticides in International Trade.

54. In addition to these three conventions, other international agreements and negotiations are relevant to chemicals and waste pollution regionally or globally. The Convention on Long-range Transboundary Air Pollution (LRTAP) of the United Nations Economic Commission for Europe and its eight protocols are of limited geographic and substantive relevance, and therefore not discussed here.³² Other international instruments for managing chemicals, namely the Pollutant Release and Transfer Registers (PRTRs) and the Strategic Approach to International Chemicals Management (SAICM) are discussed separately below.

55. Negotiations are expected to conclude in 2013 on a legally-binding instrument on mercury pollution. It is expected that it will contain provisions on mercury exposure, including supply sources, such as mercury mining and international and domestic distribution; use in products and processes; artisanal and small-scale gold mining; emissions and releases into air, water and land; waste, storage and remediation of contaminated sites. In order to prevent the various human rights impacts of extractive activities due to a range of pollutants, strong and clear legally-binding obligations to reduce exposure to mercury as well as other inorganic pollutants are necessary. However, despite the substantial time and cost of negotiations, draft treaty texts for a legally-binding agreement on mercury do not show the desired willingness on the part of States to address other heavy metals associated with extractive industries that warrant international action, such as lead and cadmium.

56. Parties to the Stockholm, Basel and Rotterdam conventions determine the chemicals covered under the scope of each agreement. However, some chemicals are categorically excluded from particular conventions. For example, the Stockholm Convention only applies to organic (carbon-based) chemicals, and does not cover inorganic elements like elemental mercury (methyl-mercury could theoretically be included), which is produced and released through extractive activities. Cyanide, another common toxic substance associated with extractive industries, is also not within the scope of the Stockholm Convention because it does not meet the bio-accumulation criterion.

57. Exemptions under the Basel Convention include chemicals that are subject to other international controls, radioactive wastes, and discharge from ships, as well as those traded to or from non-State Parties, or depending on a country's level of development. The Rotterdam Convention, which does not regulate chemicals, but rather establishes a mechanism to exchange information and prior informed consent of States importing hazardous chemicals, does not apply to radioactive materials, wastes and chemicals in quantities not likely to affect human health. The long-range transboundary movement of hazardous chemicals through wind, water or living organisms is not covered by the Basel and Rotterdam conventions. The scope of these conventions is further limited by political realities, such as the refusal to list chrysotile asbestos – the most commonly used form of asbestos, the hazards of which are well-established – as a hazardous substance under the Rotterdam Convention.

58. Additional gaps include the limited number of parties to certain conventions as well as the limited geographic scope of some. Although most States are party to the Basel, Rotterdam and Stockholm conventions, certain key industrialized countries have not

³² The LRTAP protocol with the most potential relevance to the impacts outlined above is the Aarhus Protocol on Heavy Metals which covers cadmium, lead and mercury; however, it currently applies to stationary sources of atmospheric emission, such as pollution associated with gas flaring.

ratified some of these conventions. While as of 1 June 2012, 87 States were parties to the London Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, the more progressive “London Protocol,” agreed in 1996 and intended to modernize and replace the London Convention, has been ratified by only 42 States. The Convention on Long-range Transboundary Air Pollution and the Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR) are of limited geographic scope.

59. The Special Rapporteur is concerned that the Basel, Rotterdam and Stockholm conventions provide limited protection for the many populations vulnerable to the chemicals used and the waste produced by extractive industries, especially as their relevant shortcomings are not clearly addressed by other global, legally-binding agreements. This may create a protection vacuum which will diminish the capacity to monitor the situation of hazardous substances as well as access to remedies by aggrieved persons.

60. Pollutant Release and Transfer Registers (PRTRs) are mechanisms that help to ensure the right to access information regarding human or environmental health in relation to releases of hazardous substances. The Kiev Protocol on Pollutant Release and Transfer Registers to the Aarhus Convention on Access to Information, Public Participation and Decision-making and Access to Justice in Environmental Matters ensures the public’s right to know about releases of pollutants from extractive industries. Although the Aarhus Convention and its Kiev Protocol was developed and is administered by the United Nations Economic Commission for Europe, they are both open to accession by any member State of the United Nations. PRTRs operate under the expectation that they will exert a significant downward pressure on levels of pollution, as no company will want to be identified as among the biggest polluters.

B. International Labour Organization conventions

61. Several International Labour Organization (ILO) conventions concern the occupational hazards facing workers in extractive industries. In particular:

- Convention No. 148 concerning the Protection of Workers against Occupational Hazards in the Working Environment Due to Air Pollution, Noise and Vibration states that, “as far as possible, the working environment shall be kept free from any hazards due to air pollution, noise or vibration.”³³
- Convention No. 155 concerning Occupational Safety and Health and the Working Environment requires parties to establish a coherent national policy on occupational safety and health in order to improve working conditions.
- Convention No. 162 concerning Safety in the Use of Asbestos obligates States parties to prescribe measures to protect workers from exposure to asbestos, including partial or total bans on future asbestos use, and thus its extraction; proper asbestos waste disposal; inspection and monitoring procedures of working conditions; and providing information on the hazards of asbestos to workers.
- Convention No. 170 concerning Safety in the Use of Chemicals at Work compels States parties to protect workers from exposure to hazardous chemicals. Employers in States parties to the Convention are obligated to classify and identify hazardous

³³ ILO Convention No. 148 entered into force in 1979; as of 1 June 2012, it had been ratified by 45 States; arts. 8 to 10, 13 and 16 set out technical measures of prevention or harm mitigation, including the provision by an employer of protective equipment; States parties must establish criteria for determining hazards, report hazards, as well as implement a programme of workplace inspections.

chemicals so as to ensure that workers are not exposed to hazardous chemicals in excess of exposure limits, and to minimize risk.

- Convention No. 174 concerning the Prevention of Major Industrial Accidents obligates States parties to “formulate, implement and periodically review a coherent national policy concerning the protection of workers, the public and the environment against the risk of major accidents” (art. 4) and “establish a comprehensive siting policy arranging for the appropriate separation of proposed major hazard installations from working and residential areas and public facilities” (art. 17).
- Convention No. 176 concerning Safety and Health in Mines establishes standards for all mining operations, excluding oil and gas extraction. Parties to the convention must consult with representatives of employers and workers to formulate a policy on safety and health in mines consistent with the minimum standards set out in the Convention.³⁴
- Convention No. 169 concerning Indigenous and Tribal Peoples in Independent Countries recognizes the need for special safeguards of the rights of indigenous peoples to the natural resources, including mineral or sub-surface resources, pertaining to their lands, including the right to participate in the use, management and conservation of these resources and in the benefits of their extraction.

62. Despite the robust and varied protection offered by the ILO conventions, the Special Rapporteur stresses what he considers their three primary shortcomings. First of all, the lack of widespread ratification (ranging from 6 to 57 countries) of these conventions means that global commitment to the full extent of the standards articulated is difficult.

63. Secondly, implementation remains a substantial problem in States that have ratified some or all of these conventions. Indeed, several States parties to Convention No. 169 fail to adequately consult indigenous peoples prior to development and promotion of an extractive undertaking, despite the requirement under the Convention to establish or maintain procedures for consultation with affected indigenous communities, “with a view to ascertaining whether and to what degree their interests would be prejudiced, before undertaking or permitting any programmes for the exploration or exploitation of such resources pertaining to their lands” (art. 15, para. 2).³⁵ With regard to asbestos extraction, Convention No. 162 has been somewhat successful in reducing asbestos extraction and consumption around the world from an estimated 4.73 metric tons in 1980 to about 2.11 metric tons in 2003.³⁶ However, despite the adoption of the resolution concerning asbestos in 2006, which endorsed the “elimination of future use of asbestos,”³⁷ extraction and use of

³⁴ Arts. 2 and 3 of the convention obligate employers to adhere to the best practices of mine safety contained therein; the convention places the burden on employers to ensure mine safety, requiring them to inform workers of hazards, provide protection, access to medical care, as well as to take all practical steps to eliminate or minimize risk of harm to workers. Additionally, States parties must implement mine inspection programmes and make public statistics on the hazards associated with mining.

³⁵ For example, a human rights assessment report commissioned by a mining company found that Guatemala had violated its obligations under ILO Convention No. 169 by failing to establish a framework for consultation with indigenous peoples with regard to a mining operation that has substantial negative environmental impacts. See On Common Ground Consultants Inc., *Human Rights Assessment of Goldcorp’s Marlin Mine*, Executive Summary (May 2010), p. 12.

³⁶ United States Department of the Interior and United States Geological Survey, Circular 1298, *Worldwide Asbestos Supply and Consumption Trends from 1900 through 2003* (2006), p. 17.

³⁷ Resolution adopted by the International Labour Conference at its 95th session, June 2006, para. 1.

asbestos remains alarmingly high (in some cases, production has increased), including in countries that have ratified the Convention.

64. Thirdly, the obligations contained in the conventions are often inadequate to address the problems related to hazardous wastes. For example, Convention No. 169 only requires consultation with affected indigenous and tribal peoples in decision-making on the extraction of natural resources and only provides for compensation for damage from harms caused by such extraction rather than mitigation, which could be accomplished through a robust free, prior and informed consent procedure. Likewise, the other conventions mentioned above contain critical qualifiers to obligations based on “national conditions and practice” which can result in reduced standards in some countries on the grounds that they lack the resources to meet obligations under one or more conventions.

C. Non-binding international agreements

65. States participating in the World Summit for Sustainable Development, held in Johannesburg, South Africa in 2002, agreed on an ambitious goal of achieving the sound management of chemicals throughout their lifecycle by the year 2020. To achieve this goal, States attending the International Conference on Chemicals Management, held in Dubai in 2006, adopted the Strategic Approach to International Chemicals Management (SAICM), a non-binding, voluntary initiative that comprises the Dubai Declaration on International Chemicals Management; the Overarching Policy Strategy; and a Global Plan of Action. Although SAICM features a participatory structure and the implicit inclusion of an objective to mitigate the human rights implications of extractive industries, States and private industry bear no legal obligations, and funding for the process has not been commensurate with the task of meeting the 2020 goal.

66. The emergence of SAICM as a non-binding, voluntary initiative coincides with a general trend towards voluntary corporate social responsibility principles and international standards.³⁸ Industry-led initiatives, such as the International Cyanide Management Code for the Manufacture, Transport and Use of Cyanide in the Production of Gold and the International Council on Mining and Metals Sustainable Development Framework, have both strengths and weaknesses. Their strength lies in the fact that the agreements are typically adopted by a large number of relevant private actors, providing an initial set of principles from which to build both corporate policies and practices, as well as a more detailed set of norms and management frameworks for extractive industries.

67. However, these initiatives are generally regarded as insufficient and minimal, establishing expectations at or below current practices. In some cases, companies which operate in strictly a domestic context are excluded from their scope; in others, regional or economic groupings impede global legitimacy. Voluntary initiatives also raise several other governance challenges, such as a fragmented disconnection with other international tools and legal instruments, and limited participation, transparency and accountability, with weak investigatory, monitoring and reporting mechanisms.

³⁸ These include the International Cyanide Management Code for the gold mining industry; the Environmental Excellence in Exploration (E3); the Extractives Industry Transparency Initiative; the Global Reporting Initiative; the International Council on Mining and Metals (ICMM) Sustainable Development Framework; the Organisation for Economic Co-operation and Development (OECD) Guidelines for Multinational Enterprises; the Towards Sustainable Mining (TSM) Guiding Principles; the United Nations Global Compact, among others.

VI. Conclusions and recommendations

68. On the basis of his study of the management and disposal of hazardous substances and waste used in and generated by extractive industries, and their relationship with human rights, the Special Rapporteur makes the following recommendations.

69. In accordance with their obligation to respect, protect and fulfil human rights, States should:

(a) Develop a comprehensive, legally-binding regime to ensure chemical safety throughout the lifecycle of all chemicals, both synthetic and naturally-occurring, with particular attention to the needs of the most vulnerable. In this regard, the Special Rapporteur considers that a treaty on mercury is crucial. The current array of narrowly focused legally-binding agreements for chemicals and wastes do not adequately address, let alone eliminate, exposure to the numerous hazardous substances and wastes generated by extractive industries that result in human rights impacts;

(b) Ratify the Kiev Protocol on Pollutant Release and Transfer Registers (PRTRs) to the Aarhus Convention, if they are not already parties, as global participation in the Protocol would increase corporate accountability, encourage improvements in environmental performance, and increase knowledge about hazardous substances and wastes;

(c) Take a lead in moving towards the universal ratification of relevant International Labour Organization (ILO) conventions;

(d) Move towards the establishment of international standards regarding the amount of allowable negative impacts of extractive industries on health and the environment so as to address the disparate impacts on communities in nations with weak regulations. A central enforcement body to review project proposals would help to uphold such international standards;

(e) Maximize synergies between hazardous chemicals and other environmental regimes, such as climate change and biodiversity;

(f) Carry out comprehensive environmental, social and human rights impact assessments that examine existing natural resources in the area, cumulative impacts of projects and socioeconomic linkages to environmental issues. Special consideration should be given to how activities might impact the rights of indigenous peoples. Impact assessments must use reliable baseline studies, for both environmental contaminants as well as human health conditions. Impact assessments should be ongoing to effectively monitor the evolving impacts of extractive operations, and they should be carried out by competent, independent third parties;

(g) Establish permanent spaces for consultation and dialogue in decision-making processes at local and national levels, before issuing the invitation to tender and awarding the concession, where the peoples and communities concerned, companies and local authorities are appropriately represented. Community capacity-building is often required to enable meaningful participation during consultation. Involve intergovernmental and non-governmental organizations focusing on health and the environment in building the capacity of local communities to participate in an informed manner;

(h) Ensure that the benefits of extractive activities are equitably distributed among affected communities. Greater awareness regarding the potential inadequacy

of financial payments is needed, as it can create undue influence and enable adverse impacts. To this end, mechanisms that strengthen the capacity of indigenous and tribal peoples and further their own development priorities should be favoured;

(i) Promote transparency at country and company level, including the disclosure of production-sharing agreements, host country agreements, power purchase agreements, economic and financial assessments, environmental and social assessments, monitoring and evaluation results, and information on accident prevention and emergency response. Annual, public monitoring reports should be provided;

(j) Ensure that the “polluter pays principle,” that is, the internationalization of costs by industry and liability regimes for illegal dumping, is implemented in practice;

(k) Provide greater incentives on green corporate social responsibility initiatives and public-private partnerships;

(l) Make concerted efforts towards activities under SAICM in order to build the capacity of developing countries for chemicals management – including the capacity to evaluate, monitor and regulate extractive industries – and implementation of international obligations;

(m) Rigorously evaluate all tailing disposals and ensure ongoing monitoring of waste and tailings dumps;

(n) Promote sustainable practices and sources of energy with a view to reducing reliance on extractive industries.

70. In accordance with their duty to respect human rights, companies and other private actors should:

(a) Develop and adopt techniques to reduce the hazardous waste generated by the extractive industry;

(b) Routinely monitor for associated toxic substances at the mine site as well as in nearby sources of drinking water or aquatic habitat, when hazardous substances that can contaminate water are used, such as cyanide and hydro-fracking solutions;

(c) Recognize the right of access to information and avoid using the privilege of confidential business information to shield health and safety information on the hazardous substances used and produced by extractive industries, to which humans and wildlife may be exposed, such as chemicals dispersants and hydro-fracking solutions;

(d) Exercise due diligence so as to avoid becoming complicit in human rights violations committed by host governments;

(e) Adhere to the “polluter pays principle,” by providing insurance and compensation for project-caused sickness, accidents, and toxic legacy issues. Regulations should include adequate, verifiable and participatory precautionary measures to account for transboundary issues, such as river pollution, that may affect communities outside national borders;

(f) Support the United Nations-backed Principles for Responsible Investment Initiative (PRI) devised by the investment community in recognition of the fact that environmental, social and corporate governance issues can affect the performance of investment portfolios;

(g) Adhere to the Protect, Respect and Remedy Framework for Business and Human Rights and best practices such as the International Cyanide Management Code for the gold mining industry; the Environmental Excellence in Exploration (E3); the Extractives Industry Transparency Initiative; the Global Reporting Initiative; the International Council on Mining and Metals (ICMM) Sustainable Development Framework; the OECD Guidelines for Multinational Enterprises; the Towards Sustainable Mining (TSM) Guiding Principles; the United Nations Global Compact.

71. In accordance with their obligations as subject to public international law, development finance institutions should:

(a) Undertake human rights due diligence to ensure that potential impacts on human rights are assessed and addressed. Intermediaries that have substantial local ownership and are equipped to make investments that are in line with the development objectives and approach of the development finance institutions should be prioritized;

(b) Ensure that grievance mechanisms conform fully to principles outlined in the Protect, Respect and Remedy Framework such that they are legitimate, accessible, predictable, equitable, transparent and compatible with internationally recognized human rights standards. The first comprehensive review of the World Bank's safeguard policies over the next year presents an opportunity to incorporate these recommendations and ensure that its investments in extractive industries do not cause or contribute to human rights impacts.
