

International environmental law and global public health

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Abstract The environment continues to be a source of ill-health for many people, particularly in developing countries. International environmental law offers a viable strategy for enhancing public health through the promotion of increased awareness of the linkages between health and environment, mobilization of technical and financial resources, strengthening of research and monitoring, enforcement of health-related standards, and promotion of global cooperation. An enhanced capacity to utilize international environmental law could lead to significant worldwide gains in public health.

Keywords Environmental health; International law; World health; Environmental exposure/legislation; Conservation of natural resources/legislation; Environmental pollution; Greenhouse effect; Environment; International cooperation; Interinstitutional relations; Developing countries (*source: MeSH, NLM*).

Mots clés Hygiène environnement; Droit international; Santé mondiale; Exposition environnement/législation; Protection ressources naturelles/législation; Pollution environnement; Effet serre; Environnement; Coopération internationale; Relation interinstitutionnelle; Pays en développement (*source: MeSH, INSERM*).

Palabras clave Salud ambiental; Derecho internacional; Salud mundial; Exposición a riesgos ambientales/legislación; Conservación de los recursos naturales/legislación; Contaminación ambiental; Efecto invernadero; Ambiente; Cooperación internacional; Relaciones interinstitucionales; Países en desarrollo (*fuentes: DeCS, BIREME*).

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Introduction

A major shift in public health has occurred in recent years, with disease threats having become more transnational in nature. Because many countries are losing their ability to contain threats to health within their own borders, international law has become a necessary tool for promoting action on public health issues. Questions of health and the environment have become serious global concerns requiring increased international legal cooperation.

Environmental factors are increasingly responsible for ill-health in many parts of the world (1, 2). This is particularly true in developing countries and among poor and vulnerable groups, who are most at risk of exposure to environmental hazards associated with poverty, industrialization, and rapid urbanization (3, 4).

The United Nations Conference on the Human Environment, held in Stockholm in 1972, was the first to draw attention to environmental degradation and spearheaded a move towards more intensified international action on this matter (5). Following the work of the World Commission on Environment and Development, and the publication in 1987 of its report *Our common future* (6), the United Nations Conference on Environment and Development (also referred to as the Earth Summit) was held in Rio de Janeiro in 1992 (7). The resulting Rio Declaration on Environment and Development, and Agenda 21, a global programme of action on sustainable development, were adopted, and legally binding instruments such as the Convention on Biological Diversity

and the Framework Convention on Climate Change were opened for signature at the Earth Summit.

Agenda 21 stressed the need to protect and promote human health, e.g. by encouraging preventive efforts and by reducing risks associated with environmental pollution and other hazards (8). The World Summit on Sustainable Development, held in Johannesburg in August 2002 (9), reviewed progress on the implementation of Agenda 21 and recommended measures for strengthening it (10) and the related outcomes of the United Nations Conference on Environment and Development. Health was identified as one of five key priorities in sustainable development (11). Agenda 21 and sustainable development have thus provided a platform whereby WHO can promote health through, inter alia, international environmental law.

Many multilateral environmental agreements have health implications, e.g. the Montreal Protocol on Protection of the Ozone Layer (1987), the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal (1989), the Convention on Biological Diversity adopted in 1992 (including the Cartagena Protocol on Biosafety), the Kyoto Protocol of the United Nations Framework Convention on Climate Change (1997), the Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade (1998), and the Stockholm Convention on Persistent Organic Pollutants (2001).

In this paper we examine the potential for international environmental law to promote global health.

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International environmental law and global public health: key linkages and case studies

The Stockholm Convention on Persistent Organic Pollutants

The Stockholm Convention is a treaty designed to protect human health and the environment from persistent organic pollutants (12). These toxic substances are highly persistent in the environment (13), accumulate in the fatty tissue of living organisms, and even in small amounts can disrupt normal biological functions. Once released into the environment they can travel for thousands of kilometres away from their source. For example, the levels of polychlorinated biphenyls in the breast milk of Inuit mothers, whose diets contain fatty foods such as whale and seal meat, have been found to be five times higher than those of mothers in industrialized countries (14). Despite an increasing knowledge base on the low-dose, long-term indirect biological effects of persistent organic pollutants, some aspects are still not properly understood, and more studies are needed to analyse the effects of these pollutants on humans (13).

Even before the Stockholm Convention, certain persistent organic pollutants had been banned or restricted in many countries, resulting in reductions in the levels of these substances locally or regionally (15). However, because these substances do not respect national boundaries, it became evident that international cooperation would be required to protect human health and the environment. In 1997 the United Nations Environment Programme proposed intergovernmental negotiations on a legally binding instrument, and following endorsement of this proposal by the World Health Assembly an intergovernmental negotiating committee was established (15).

The Stockholm Convention was finalized in 2001 and is expected to enter into force in 2004 after ratification by 50 countries. It has been hailed as a “global public health treaty”, “one that will protect public health from both malaria and DDT” and “the first global agreement ever to seek to ban an entire class of chemicals because of their direct effects on human health” (16). It has wide implications for the protection and promotion of public health, both locally and globally. Under Article 8 of the Convention, for example, health is a criterion on which to base the regulation of substances. Interestingly, Article 8 stipulates that a lack of full scientific certainty about the effects of a particular substance should not prevent it from being proposed for regulation.

The Convention creates a legal regime for restricting or eliminating the use and production of 12 contaminants whose toxicity, persistence, and mobility in the environment pose dangers to human health as well as to the environment (17). Eight of these contaminants are pesticides, two are industrial chemicals, and two are persistent organic pollutant by-products. The intentionally produced substances are divided into two categories: those subject to elimination, e.g. polychlorinated biphenyls, and those subject to restriction. The Convention also seeks to minimize and ultimately to eliminate releases of unintentionally produced persistent organic pollutants such as dioxins and furans. Provision is also made for the eventual inclusion of new substances that have the characteristics of persistent organic pollutants.

Each ratifying country is required to develop a national implementation plan within two years after the Convention enters into force. In this connection, developing countries and

countries with economies in transition are eligible for capacity-building support from the Global Environment Facility (12, 18). In 2002 the Facility approved national implementation plans for several countries in the Caribbean, Central and South America, Africa, Asia, and Central and Eastern Europe (18).

The Convention covers information exchange, the raising of public awareness, the promotion of public participation in measures aimed at dealing with persistent organic pollutants, training programmes, research, development and the monitoring of these pollutants (17). Of particular relevance is that the Convention provides for the eventual phasing out of DDT but also permits its continued use for public health purposes, i.e. for vector control in the absence of effective and affordable alternatives, in order to combat malaria in developing countries in accordance with WHO recommendations and guidelines and subject to review every 3 years (19). The Convention also encourages the parties to provide technical and financial support for efforts to find alternatives to DDT in malaria control. This dual role illustrates how an environmental treaty can promote public health even when the immediate health gains and the longer-term environmental and health impacts may seem to be in conflict with one another.

The Convention undoubtedly represents a major advance in confronting the threats to health and the environment posed by persistent organic pollutants. Nevertheless, its implementation presents many difficulties, among them the technological problems associated with eliminating such pollutants without creating new ones, e.g. by incineration. Moreover, significant changes in industrial, agricultural, environmental, and food policies are needed at the national level (16).

Support for the process of eliminating persistent organic pollutants also comes from other sources, including the United Nations Environment Programme’s London Guidelines for the Exchange of Information on Chemicals in International Trade, the Rotterdam Convention on Prior Informed Consent (20), the Basel Convention on Transboundary Movement of Hazardous Wastes, and Agenda 21.

United Nations Framework Convention on Climate Change

The Intergovernmental Panel on Climate Change has conducted a comprehensive review of climate change and its potential impacts (21). Increases in global mean temperature of 1–3.5 °C are projected by 2100, with regional variations. Long-term changes in world climate can be expected to affect many of the prerequisites for health, such as provision of sufficient food, safe and adequate drinking-water, and secure housing. There may be both direct effects on health, e.g. mortality caused by heat waves, floods and storms, and indirect effects resulting from disturbances in complex ecological processes influencing, for example, the distribution and abundance of vectors, and the incidence of infectious diseases. There are already suggestions that climatic factors are responsible for the occurrence of insect-borne diseases at increasingly high latitudes in Africa, Asia, and Latin America (22).

The United Nations Framework Convention on Climate Change (23) was negotiated in the course of the preparations for the United Nations Conference on Environment and Development, held in 1992. This Convention established commitments to stabilize greenhouse gas concentrations in the

atmosphere at a safe level over the long term and to limit emissions of greenhouse gases by developed countries in accordance with targets and timetables. It also established a financial mechanism for developed countries to provide financial resources so that developing countries could meet certain costs of adaptation. Guiding principles were laid down, together with a potentially innovative mechanism for implementation and the settlement of disputes. The parties listed in Annex I of the Convention are required to adopt national policies and take corresponding measures for the mitigation of climate change by limiting emissions of greenhouse gases. Within six months of the entry into force of the Convention and periodically thereafter, each party is required to communicate detailed information about its policies and measures for limiting emissions of greenhouse gases and enhancing greenhouse gas sinks and reservoirs.

These obligations have been consolidated in the Kyoto Protocol (24), a legally binding agreement concluded at the Third Conference of Parties to the United Nations Framework Convention on Climate Change in 1997, which was followed by four years of negotiation on implementation (25). This agreement aims to reduce, between 2008 and 2012, the emissions of six greenhouse gases, including carbon dioxide, methane, and nitrous oxide, in Annex 1 countries, to 5.2% below the 1990 concentrations. At least 55 countries, incorporating Parties included in Annex 1 that accounted in total for at least 55% of the total carbon dioxide emissions for 1990 of these Parties, must ratify these protocol in order for it to enter into force.

This process has already led to increased awareness of the problem of climate change and of the need to confront it both nationally and internationally, for example by expanding the use of renewable energy sources and phasing out the use of fossil fuels (26). Unfortunately, there have also been some setbacks, notably the decision of the USA not to ratify the Kyoto Protocol and the profound implications for health if this country fails to reduce its output of greenhouse gases (27). On the other hand, at the recent World Summit on Sustainable Development, Canada, the Russian Federation, and several other countries announced that they intended to ratify the Protocol.

Controversy exists over the emissions trading system, which allows a country whose project activities have resulted in certified emission reductions to sell credit to another country, to contribute to compliance with part of their quantified emission limitation and reduction commitments (24). Another problem is the failure to obtain voluntary agreement on reducing greenhouse gas emissions in developing countries, which are predicted to be the largest sources of such emissions in the next 15 years (26). It is intended that these matters be tackled by the Clean Development Mechanism (24, 28) and other means. Clearly, developing countries need substantial incentives to reduce their emissions, including the transfer of technology relating to energy efficiency and renewable energy. Significant reductions in morbidity and mortality associated with air pollution can be expected if the use of fossil fuels is diminished (22, 29)

Discussion

The United Nations Conference on the Human Environment (1972), the United Nations Conference on Environment and

Development (1992) and the World Summit on Sustainable Development (2002) have led to an increasing awareness of the links between health and environmental factors. Efforts to address both health and environmental goals have been strengthened in order to achieve sustainable development. International environmental treaties offer the prospect of further advances in public health.

Effectiveness of international environmental conventions

In evaluating the effectiveness of international environmental conventions it is necessary to consider compliance and legal effectiveness, political and behavioural effectiveness (i.e. whether beneficial behavioural change occurs), and problem-solving effectiveness (i.e. whether problems are solved and treaty objectives are met (30)). For example, the Montreal Protocol on Substances that Deplete the Ozone Layer limits the consumption and production of ozone-depleting substances. It is legally effective because countries comply with its control measures, and is behaviourally effective to the extent that countries reduce their consumption and production of these substances. It would prove to be effective for problem solving if the depletion of the stratospheric ozone layer were reversed (30).

More than 140 multilateral agreements govern behaviour related to international environmental issues. Despite weak enforcement measures in many cases, and a frequent lack of formal monitoring mechanisms, a high level of compliance with multilateral environmental agreements has generally been achieved (31, 32). However, compliance may be a poor indicator of the effectiveness of international environmental cooperation. Even with high levels of compliance, commitments have had little influence on behaviour (31), often because they have reflected what countries were already doing.

The enforcement of the terms of such treaties has frequently been weak. Usually, commitments are established first and procedures for enforcement are deferred (31). In some cases the commitments have been so weak that enforcement has not been necessary. In many industrialized countries, internal pressure to comply has been a strong incentive for enforcement. Media campaigns, lobbying, and boycotts have often been used to good effect to encourage compliance where judicial actions have been absent (31).

Clearly, it will take years to assess the effectiveness of the treaties discussed above. In general, however, it seems that there is a trend towards strengthened implementation and compliance. According to most reports, for example, the Montreal Protocol has been an unqualified success, having changed the way certain industries conduct their business and, in some countries, having led to a complete phase-out of particular classes of chemicals (33).

Although significant improvement in the state of the ozone layer cannot yet be expected, there is evidence that its rate of deterioration is decreasing and that the concentrations of some ozone-depleting substances are beginning to decline. Of particular note is that the global consumption of chlorofluorocarbons, the main cause of ozone depletion, declined by more than 70% between 1986 and 1996 (30). It is doubtful whether such a marked change would have occurred had the Montreal Protocol not been adopted in 1987. The Kyoto Protocol lays down precise national targets for greenhouse gas emissions, and it is to be hoped that, on the

basis of monitoring, progress will eventually be made in this field, at least in limiting emissions of carbon dioxide and other key gases.

In the case of the Montreal Protocol, the potential damage to governments' reputations if they failed to take action was undoubtedly an important factor favouring swift responses, in addition to the dire implications for life and human health of a depleted ozone layer. Such considerations are likely to be equally important in relation to the Kyoto Protocol, particularly as new evidence of effects on the environment and on health emerges.

Financial, technical, and other assistance

The provision for financial and technical assistance is an important element in the above conventions. It received a large boost in 1991 with the creation of the Global Environment Facility to serve as a mechanism for international cooperation in relation to biological diversity, climate change, international waters and depletion of the ozone layer (34). Over 500 projects, valued at US\$ 2 billion, have been funded through the Facility. The Montreal Protocol's Multilateral Fund is distributing nearly US\$ 1 billion to compensate developing countries for the cost of phasing out ozone-depleting substances (31). The creation of the Fund led to China joining the Montreal Protocol immediately, and Brazil, India, and virtually all other developing countries have followed suit. Subsequently, nearly all major global environmental agreements have included provisions for financial assistance.

In addition to provisions for technical and financial assistance and, in some cases, threats of trade sanctions (32), the success of international treaties is likely to be significantly enhanced if signatories are required to submit reports on their current and future activities. This is true, for example, of the Stockholm Convention, which requires national implementation plans to be drawn up. Under the Montreal Protocol there is a system for implementation review and a non-compliance procedure for addressing implementation issues.

The process of preparing implementation plans provides a valuable opportunity to involve nongovernmental organizations and other stakeholders, such as scientific institutions, in the planning process. The oversight role of public interest nongovernmental organizations is a potentially important aspect of international cooperation, as is the work of scientific institutions in data collection, monitoring, surveillance, and

analysis. Indeed, in the processes of drawing up both the Framework Convention on Climate Change and the Stockholm Convention a wide variety of parties from many different sectors were centrally involved from the outset and played key roles in the negotiation of outcomes and in influencing action at the national level.

Role of WHO and other international agencies

Due in part to WHO's increasing involvement in international conferences and treaty-making processes in recent years, health considerations have gained increased recognition and attention. It is to be hoped that this trend will continue and that the contribution of the health sector will grow as public health issues are actively championed.

Moreover, there is much scope for WHO and other bodies concerned with public health and the environment, e.g. the United Nations Environment Programme, to use environmental treaties in the interest of promoting health. In this connection it is possible to rely, for example, on an increasingly strong scientific evidence base. Mechanisms within international environmental law can be used to provide motivations for research aimed at further strengthening the evidence base relating to health, and to achieve improved surveillance and monitoring systems concerned with ill-health associated with particular environmental issues covered by the treaties.

WHO and other bodies concerned with health and the environment should seek to strengthen capacities to facilitate more fully and effectively the integration of environmental law into efforts to promote global health. A more robust approach to facilitating the development and implementation of international environmental law in the interest of health can be expected to result in significant gains in this area.

Conclusion

There is a growing awareness of threats to public health associated with environmental factors, and increasing attention is being given to the health aspects of sustainable development (35). Against this background, international environmental law may well prove effective in galvanizing action both nationally and internationally in favour of public health. ■

Conflicts of interest: none declared.

Résumé

Droit international de l'environnement et santé publique dans le monde

L'environnement est encore aujourd'hui une source de maladie et de mauvaise santé pour de nombreuses personnes, en particulier dans les pays en développement. Le droit international de l'environnement peut constituer une stratégie viable d'amélioration de la santé publique par la promotion d'une meilleure connaissance des liens entre santé et environnement, la

mobilisation de ressources techniques et financières, le renforcement de la recherche et de la surveillance, la mise en application de normes à visée sanitaire et la promotion de la coopération à l'échelle mondiale. Une capacité accrue à utiliser le droit international de l'environnement pourrait conduire à des gains appréciables en matière de santé publique partout dans le monde.

Resumen

El derecho ambiental internacional y la salud pública mundial

El ambiente sigue siendo una causa de problemas de salud para muchas personas, sobre todo en los países en desarrollo. El derecho ambiental internacional prepara una estrategia viable para mejorar la salud pública mediante el fomento de un mayor conocimiento de las relaciones entre la salud y el ambiente, la movilización de recursos técnicos y financieros,

el fortalecimiento de la investigación y la vigilancia, el cumplimiento de las normas relacionadas con la salud y la promoción de la cooperación mundial. La mejora de la capacidad de aplicación del derecho ambiental internacional puede redundar en beneficios importantes para la salud pública a nivel mundial.

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