Environmental health in environmental protection

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In Australia, the last 30 years has seen an improvement in the health of the population through management of the environment; with the requirement for environmental impact assessments (EIAs) preventing environmental damage rather than relying on expensive and maybe ineffective remediations. However, the new complex issues that face us, once again require a progression in environmental protection processes. To achieve this three strategies require rapid acceptance into environmental protection processes:

- greater inclusion of public health in environmental assessments, to reduce adverse health impacts suffered, in particular, by minorities within the community;
- the integration of ecologically sustainable development (ESD) and environmental health with social and economic development to produce an 'all win' situation for businesses, the community and the environment; and
- the combination and expansion of risk assessment/management procedures to produce a more holistic process allowing complete involvement of stakeholders.

This article highlights these problems in an attempt to raise the awareness of, and improve, environmental health practice within Australia.

The place of public health within environmental assessments

Generally, EIAs lack the human factor, i.e. a focus on the health, spirit and well-being of a community. In Australia, the Environmental Protection Authorities (EPAs) are independent of the Public Health Department (PHDs), with variable communication between the two. This is because PHDs set health standards and deal with health risks (the severity of a condition, the frequency of its occurrence, its measurability and courses of intervention), whilst the EPAs aim to protect, conserve and manage the land and ecosystems. This results in the sporadic participation of the PHDs in EIAs.

The health of the Australian population is defined within the National Environmental Health Strategy (NEHS) as 'a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity'.[1] The EPA goes along way to protecting health from environmental pollution, however, there is often little explicit recognition of public health as a principal outcome. The discussion and implementation of appropriate strategies is difficult when the data that decisions are made upon are incomplete or absent. A more collaborative approach is required to effectively implement strategies and reduce health risks; this approach is expressed by the term environmental health, i.e. 'those aspects of human health determined by physical, chemical, biological, social factors in the environment'.[1]

When proponents submit environmental assessments to the EPA, information not always considered is that concerning the more vulnerable members of the community. This information may relate to people who are more susceptible to certain toxins (e.g. in Boston a proposal to establish an asphalt plant was refused on the basis of a high incidence of asthma and cardiovascular disease in the area[2]); people who have a lower socioeconomic status (possibly resulting in a lower standard of health care and increased mortality); or the presence of high numbers of children or elderly people in the area (e.g. the presence of schools, nurseries and homes for the elderly). Clearly, greater consideration of public health issues would ensure that public health is more effectively protected in EIAs.

Amelioration of EIAs, to take an environmental health approach and effect an overall improvement in public health, can be achieved in several ways. Most importantly, increased communication and collaboration between the EPAs and PHDs would help identify, evaluate and control potential health risks. This was recognised, by the InterGovernmental Agreement on the Environment, 1992, where 'impact assessment in relation to a project, program or policy should include, where appropriate, assessment of environmental, cultural, economic, social and health factors'.[3] To address this and coordinate the efforts of the Commonwealth, States and Territories the National Health and Medical Research Council (NHMRC) drew up a framework for the incorporation of health in EIAs (EHIAs).[4] In spite of this report there are generally no legislative frameworks in place in Australia to ensure direct participation of State Environmental Health sections within the EIA process. At present Tasmania is the only State to have HIAs explicitly required within its legislation, because 'it was believed that health issues were not always adequately dealt with through the existing environmental impact assessment process ... [and that] routine use of HIA by all Australian jurisdictions ... will produce real public health benefits'.[5]

Also of importance is the need to apply the environmental health impact assessment to wider issues. Whilst the traditional industrial development projects are generally covered by an impact assessment of some description other changes, such as those regarding planning, policy and legislation, may not be assessed with respect to their effect on the health and well-being of the community. In addition, there is the need for an increase in human dose-response research, to reduce the uncertainty still associated with the effects of exposure to low levels of pollution, thereby improving the information on which environmental health judgements are based. Finally, increased awareness and understanding of environmental health, by public health and environment officials, would produce a better appreciation of the issues that relate to environmental health. This would facilitate improvement in the prevention, or at least, identification, evaluation and control of potential public health risks.

With the failure of the NHMRC publication to influence most governments' legislation, the publication of the

NEHS[1] has reiterated the importance of environmental health management. It has introduced a framework to bring together the broad range of stakeholders; an Australian Charter for Environmental Health, to 'set out the basic entitlements for individuals and communities'; and the National Environmental Health Council, to 'provide national leadership and a focus for co-operation on all environmental health issues'.

Integration of environmental health, ESD and socio-economic development

ESD is defined by the United Nations as 'meeting the needs of the present without sacrificing the ability of future generations to meet theirs'. In 1987 this concept was recognised in the Bruntland report.[6] By 1992 action plans were being produced both domestically and internationally to provide structures for the development of ecologically sustainable strategies, notably the National Strategy for Ecologically Sustainable Development (NSESD) and Agenda 21, respectively. The NSESD proposed 3 fundamental objectives:[7]

- improve the well-being of the community and the individual through economic development that safeguards the welfare of future generations
- provide equity throughout the population
- protect biological diversity and maintain life support systems

To achieve these, a framework was set out for governments to pursue. It recognised the precautionary principal (that decisions should not be delayed because full scientific data are not available and the need for decisions to integrate long and short term economic, social and environmental considerations).[7] Success in integrating ESD is variable and has been shown to exist where objectives are bounded or where partnerships are applied.[8] Failure to implement ESD has often resulted from agencies equating ESD with only environmental issues (not every business concern), electoral considerations and budgetary constraints.[8]

The ultimate aim of most governments is generally economic growth, with progress often determined by the GDP. However, the GDP is not a particularly good measure of ESD because it is not a measure of welfare or quality of life, but instead it encompasses everything, societal ills as well as benefits.[9] If the index of sustainable economic welfare (ISEW), which is adjusted to account for environmental health benefits and detriments, is compared to the GDP of the UK, the ISEW growth is seen to be minimal since 1950, whereas the GDP has increased 3 fold.[9] This example demonstrates that although there has been progress towards the integration of environmental health and ESD with socio-economic growth, whilst the economy is still a primary concern of business and government ESD is not fully practicable.

To further ESD the Productivity Commission identifies several priorities: development of specific policies and frameworks for decision-making processes; clearly defining ESD objectives; and involving stakeholders.[8]

Integration of risk assessment and risk management

Risk assessment refers to the identification of environmental health hazards, their adverse effects, target populations and conditions of exposure, whilst risk management is the process by which a decision is made about a proposal based upon the results of the risk assessment, feasibility, and socio-economic and political concerns.[4] Combined, they make up the formal procedure that allows the potential impacts of a proposal to be considered, known as the impact assessment.

In 1983 the National Academy of Sciences advocated isolation of risk assessment and management.[10] This strategy leaves environmental impact assessments submitted by proponents devoid of public input, i.e. the 'decide and defend' model. It works on the premise of making a decision and deciding on a course of action prior to a call for public comment. Whilst there does not appear to have been strict separation of risk assessment and management in Australia, integration of the two aspects has not been key to decision-making processes.

There have been concerns over this type of framework for some time, and the procedures and ability of organisations, as they are currently set-up, to carry out valid risk assessments and implement effective prevention/control strategies. Several reasons account for this, one being that regulations and precedents used in environmental protection tend to reflect risk management responses that are concluded from the effects of acute toxicity by a single toxin within a medium or laboratory extrapolations. Conclusions of this sort are often insufficient, because chemicals rarely remain in one medium, and adverse health effects may be the result of long term low exposure or several toxins acting together. A second reason for ineffectiveness relates to the government structure; agencies and departments are generally organised according to the primary issues that they are to address (e.g. education, health or environment). However, this structure is not adequate to address the inextricably linked problems concerning the environment, health and community perception of well-being. Another area of concern is the lack of support mechanisms to actively involve stakeholders in the environmental protection process from the inception of proposals. Even though there is encouragement for stakeholders to be involved, the procedure for establishing who they are, engaging them and providing the support needed is lacking.

The present process is no longer satisfactory for resolving the complex multidisciplinary issues that are now recognised as presenting risks. An effective approach can only be attained by the co-operation and involvement of government agencies, local authorities, the private sector and community organisations/groups. Understanding this, the US Presidential/Congressional Commission on Risk Assessment and Risk Management[2] put forward a case for modernising the approach to environmental regulation in 1997. The Commission re-

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defined risk management in broader terms and produced a cyclic 'Framework for Risk Management' to resolve environmental health issues. These actions take into account the de-centralisation away from government agencies to include and involve those affected by the risk, and the flexibility of risk managers to use voluntary as well as regulatory approaches for environmental protection. The fundamentals of the framework are stakeholder involvement, broad contexts (i.e. not media/chemical specific) and the ability for risk assessment to be repeated at any point of the process on the inclusion of new information. Of particular importance is stakeholder involvement; it leads to decisions that are more likely to be accepted, implemented and last; it allows for an exchange of information, highlighting differing values, gaps in knowledge and conflict; and it could increase public trust in officials, procedures and policy.

Distrust of officials can be a response to poor decision-making and/or bad communication. This is demonstrated by the bovine spongiform encephalopathy (BSE) outbreak in the UK, where the public outrage over this health risk has been severe and sustained. In June 1997, after concerns over the disposal of carcasses, to allay fears of contamination the Environment Agency issued a press release:[11]

> "The risk to human infection resulting from burning cattle cull wastes in power stations would be negligible. A detailed risk assessment, carried out by the Agency, based on test rig trial burning of meat and bonemeal and tallow from cattle slaughtered under the Government's Over Thirty Month Scheme shows that the risk of an individual contracting CJD (Creutzfeldt Jacob Disease) would be as low as 1 in 30 000 million. This is 3000 times less than the risk of death by lightning."

The Agency subsequently stated that regardless of the minimal risk established by the study, there would be further public consultation before implementation. This seems to send out a conflicting message: on one hand the Agency states the risk to the public from this activity is negligible; on the other hand they state that they will conduct the risk assessment again. This effectively casts doubt on the risk assessment process.

Risk communication should be consistent to avoid doubt and confusion, because the public needs to have faith in and rely on actions that are taken on decisions of this nature. Inclusion of stakeholders from inception will improve risk communication, and is likely to ensure courses of action as opposed to prevarication, hence giving credibility to decisions made.

Summary

The health of the population and the environment are inextricably linked. To improve both, a holistic approach is required for environmental protection procedures. The primary approach for improvement is integration; more specifically an increase in communication between official departments and agencies, and mechanisms for stakeholder involvement from the inception of projects. There is also a need to combine HIAs and EIAs, and to apply them to wider issues, such as planning, policy or legislative changes, as well as traditional industrial development projects.

It needs to be more widely appreciated that the economy and public health are ultimately substantially determined by the condition of the environment.

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