

Ethical Considerations

Previous work has identified a number of general ethical issues that will be relevant for any risk management, including radiation protection [MacLean, 1986ab; Shrader-Frechette 1991; Oughton, 1996; Shrader-Frechette and Persson, 1997]. These include questions such as: whether (i) the distribution of cost and benefits is equitable (i.e. between rural and urban populations); (ii) the risks are imposed or voluntary; (iii) stakeholders have been involved in the decision-making process; and (iv) the action carries a risk of serious environmental damage.

Within STRATEGY, these were extended and revised to be specifically relevant to the various countermeasures. The final list represents an overview of the types of questions and ethical criteria against which each individual countermeasure can be evaluated. Obviously, the descriptions below are rather general, since the actual issues will be site and context specific. A more philosophical discussion on the relationship of the following aspects to fundamental values and ethical principles, and their relation to optimised intervention, radiation protection and emergency can be found in the STRATEGY Deliverable 4 [Oughton et al., 2003] and Oughton et al. [2004].

- *Distribution of dose, costs and benefits*

The way in which a countermeasure may influence the distribution of costs, risks and benefits, has significance due to the fundamental ethical values of equity, justice and fairness. Costs, benefits and risk may vary over both space and time, and between different members of a community. Dose distribution is obviously a main consideration for radiation protection, and many countermeasures that reduce collective dose (manSv) may also change the distribution of dose, for example, from consumers/users/farmers to workers/consumers/populations around waste facilities. The question of who is paying for the countermeasure and who will receive the benefits must also be addressed. Some countermeasures, and sets of countermeasures, result in an equitable distribution of cost and dose reduction, such as investment by tax payers to reduce activity concentrations in a common food product; others are less equitable, for example, when a reduction of dose to the majority is only possible at the expense of a high dose, cost or welfare burden, on a minority, such as banning all farm production in a small community. In relation to the question of distribution, one needs to ask questions such as: Who is being affected? Who is paying? Does the countermeasure have implications for vulnerable or already disadvantaged members of society (children, ethnic or cultural minorities)?

- *Uncertainty*

Uncertainty in this context can be taken to refer to an evaluation of the risk (environmental, technical and social) associated with the countermeasure¹. It is often impossible to predict with 100% certainty what the actual consequences of the countermeasure implementation will be. Uncertainties can be connected to both the outcome itself and the probability that that outcome will occur. In some cases, uncertainties can be reduced by further research, thus knowledge from previous experience of countermeasures will be important. However, here one must also

¹ There are significant debates amongst philosophers and social scientists about the nature and implications of different forms of uncertainties. See also the section on uncertainty and the precautionary principle in Chapter 5.

consider the question of variability (e.g., environmental factors influencing ecosystem transfer of radionuclides, or differences in individual susceptibility to disease) and the rationality of extrapolating from one set of conditions to another. In evaluating individual countermeasures we need to consider: What are the main uncertainties associated with the countermeasure (including uncertainties related to social impacts)? What action might be taken to avoid or reduce these uncertainties, and are some inevitably indeterminate? What are the consequences of being wrong?

- *Self-help/Disruptive*

“Self- help” considers the extent to which the affected persons themselves can implement the countermeasure and their degree of control or choice over the situation. Voluntary countermeasures that are carried out by the public or affected individuals themselves, or that increase personal understanding or control over the situation, are usually deemed positive as the action respects the fundamental ethical values of autonomy, liberty and dignity. Concrete examples include the provision of counting equipment, dietary advice and certain agricultural procedures that could be carried out by the farmer. On the contrary, imposed countermeasures that are highly disruptive, infringe upon liberty, or restrict normal practices are usually judged to be negative. Examples would include relocation, bans on amenity use, or a radical change in farming practice.

- *Free informed consent of workers (to risks of radiation exposure and/or chemical exposure) and consent of private owners for access to property.*

The issue of consent is strongly linked to the fundamental ethical value of autonomy. Employers have a duty to obtain the informed consent of any worker who may be exposed to chemical and / or radiation risk. This is particularly important if lower paid workers (e.g. cleaners for industrial countermeasures) are employed to carry out the measure, as it has been suggested that the necessary conditions for free-informed consent are often violated for these groups [Bullard, 1990; Shrader-Frechette, 2001]. The increased risk may justify some form of compensation via higher wage premiums, but the opportunity for certain sub- groups of the population to make a profit at the expense of others can have negative social consequences (e.g., increased inequity –see below). Furthermore, compensation itself can raise questions of whether or not this may coerce people into taking risks they would otherwise not have [Bullard, 1990; Rawles, 2002]. In the early phase after an accident, informed consent to operators etc. may be a challenge as there may be a lack of crucial information on key factors such as dose, making informed consent impossible.

- *Informed consent regarding consumption of foodstuffs*

In cases where foodstuffs are already contaminated due to the accident, consent of consumers can be an issue, but is complicated by the question of who exactly has the obligation to obtain consent—authorities, farmers, producers, retailers—since they are not directly responsible for causing the contamination. Countermeasures bringing about a change in dose distribution such that they cause previously uncontaminated food to contain radionuclides can raise even more complex issues of consent and responsibility (such as mixing milk sources or feeding livestock with contaminated fodder). Those responsible for carrying out the countermeasure might be deemed to have a special obligation to obtain free informed consent from affected consumers/producers (through stakeholder dialogue). In both cases, informed consent may necessitate a specific need for labelling and other forms of information provision.

- *In situ treatment of waste*

Treatment of waste *in situ* can be positive as it avoids problems arising from “redistribution” of exposures to persons living close to disposal site. But *in situ* treatment may also have negative side effects due to complicating future waste removal or “causing” contamination of soil. However, in many cases the underlying soil will be unavoidably contaminated and the additional amount of activity incorporated would be relatively minor.

- *Change in public perception or use of an amenity*

If a countermeasure has some effect on the public’s use of a particular amenity (such as a park), then this will have an influence on the acceptability of that countermeasure. But such effects can have deeper relevance than whether or not one is able to use the amenity. Perceptions can include, for example, that something has changed from being “natural” to “unnatural” or “clean” to “damaged”. Although the ethical and rational relevance of a distinction between “natural” and “unnatural” is a matter of some contention between philosophers [Reiss and Straughan, 1996; Thompson, 1997], it is an issue with which the public has a strong tendency to attach moral relevance, and certainly impacts upon people’s sense of their quality of life. In recent years, debates about the relevance of such perceptions have perhaps been most prominent within biotechnology, for example, that “natural” selective breeding to obtain desired biological traits is acceptable, but “unnatural” genetic manipulation is not

- *Animal welfare issues*

Animal welfare is concerned with the amount of suffering the countermeasure may inflict on non- human sentient animals. In the context of agricultural countermeasures, these will be most relevant to farm animals, but could also include effects on zoo exhibits, pets or wild animals. For example, a ban on use of recreational areas may have implications for dogs. There are a number of philosophical debates around the question of why one should value non-human living beings, and whether or not they have moral standing [Singer and Regan, 1981; Oughton, 2003]. Nevertheless, in many countries, animal welfare issues are covered by law, and may result in both legal and ethical constraints on some countermeasures.

- *Liability and or compensation for unforeseen health or property effects*

Employers usually hold legal and ethical responsibilities over their employees, and contractors or industries may be held legally or financially liable for any damage they may cause to public or private property. The matter of who bears liability is relevant both from the point of responsibility (moral and legal) and because of links to equity issues. Liability can become particularly important if outside contractors are paid to carry out the countermeasure, both for the contractor themselves – Will I be sued if the countermeasure causes unforeseen damage? – and the workers/property owners who may risk injury – Will I be compensated if the countermeasure causes me damage?

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