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OPEN-ENDED AD HOC WORKING GROUP OF
LEGAL AND TECHNICAL EXPERTS ON
LIABILITY AND REDRESS IN THE CONTEXT OF
THE CARTAGENA PROTOCOL ON BIOSAFETY
Second meeting
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Item 3 of the provisional agenda*

DETERMINATION OF DAMAGE TO THE CONSERVATION AND SUSTAINABLE USE OF BIOLOGICAL DIVERSITY, INCLUDING CASE-STUDIES

Note by the Executive Secretary

I. INTRODUCTION

1. The Open-ended Ad Hoc Working Group of Legal and Technical Experts on Liability and Redress in the Context of the Cartagena Protocol on Biosafety (the "Working Group", hereinafter) held its first meeting from 25 to 27 May 2005 in Montreal. During the meeting, the Working Group considered and further developed scenarios of damage resulting from the transboundary movement of living modified organisms (LMOs), options, approaches and issues for further consideration relating to liability and redress, that were initially identified by a technical group of experts that met earlier to undertake preparatory work for the first meeting of the Working Group.

2. The Working Group also concluded that it needs further information in several areas that it considered were pertinent to accomplish its tasks specified in its terms of reference. In that regard, it requested the Secretariat, among other things, to gather information on the determination of damage to the conservation and sustainable use of biological diversity, including case-studies (paragraph 44.2 (a) of document UNEP/CBD/BS/COP-MOP/2/11).

3. The Secretariat has gathered and compiled information on aspects of this subject in earlier work related to the Cartagena Protocol on Biosafety. Relevant documents include:

- UNEP/CBD/ICCP/2/3, *Liability and redress for damage resulting from the transboundary movements of living modified organisms: Review of existing relevant instruments and identification of elements*, especially paragraphs 76 through 81;

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* UNEP/CBD/BS/WG-L&R/2/1.

- UNEP/CBD/ICCP/3/3, *Liability and redress for damage resulting from transboundary movements of living modified organisms: Note by the Executive Secretary*, especially paragraphs 15 through 18;

- UNEP/CBD/ICCP/3/INF/1, *Liability and redress (Article 27): Compilation of information on national, regional and international measures and agreements in the field of liability and redress for damage resulting from the transboundary movements of living modified organism*;

- UNEP/CBD/BS/WS-L&R/1/2, *Identification of issues relating to liability and redress from damage resulting from the transboundary movement of living modified organisms: Note by the Executive Secretary*, especially paragraphs 28 through 33;

- UNEP/CBD/BS/WS-L&R/1/3, *Report of the Workshop on Liability and Redress in the Context of the Cartagena Protocol on Biosafety*, especially paragraphs 44 through 53; and

- UNEP/CBD/BS/WG-L&R/1/INF/2, *Information on Definition of Biodiversity Loss and Work on Indicators for Assessing Progress Towards the 2010 Biodiversity Target: Note by the Executive Secretary*.

4. There have also been discussions on the concept of damage to biological diversity in the context of Article 14 paragraph (2) of the Convention. See in particular:

- UNEP/CBD/WS-L&R/3, *Report of the Workshop on Liability and Redress in the Context of the Convention on Biological Diversity*; and

- UNEP/CBD/COP/8/27/Add.3, *Report of the Group of Legal and Technical Experts on Liability and Redress in the Context of Paragraph 2 of Article 14 of the Convention on Biological Diversity*, especially paragraphs 19 through 22, and 29 through 32 as well as the Annex. (This report has also been made available to this Working Group.)

5. The present note reviews the previous work on this issue and puts together further information concerning the concept of 'the determination of damage to the conservation and sustainable use of biological diversity' as obtained from different sources. Part II of this note surveys relevant information related to possible meanings of 'damage to biological diversity', and part III presents some legislative approaches and experiences at the national level and case-studies relevant to the determination of damage to biological diversity. Finally, there is an annex, which contains a compilation of definitions of damage or a related concept from other international agreements.

II. DAMAGE TO BIOLOGICAL DIVERSITY

6. The concept of "damage to biological diversity" or "damage to the conservation and sustainable use of biological diversity" is not well-explored in the literature. The discussion below thus provides information on related concepts that may be used to inform the meaning of "damage to biological diversity" or "damage to the conservation and sustainable use of biological diversity".

7. In 1998, a UNEP Working Group of Experts on Liability and Compensation for Environmental Damage completed an extensive review of international, regional, and state legislation and practice to develop a working definition of environmental damage: "According to this working group, environmental damage is a change that has a measurable adverse impact on the quality of a particular environment or any of its components, including its use and non-use values, and its ability to support and sustain an

acceptable quality of life and a viable ecological balance." 1/ The review of the UNEP Working Group of Experts was considered by another Expert Meeting convened by UNEP in May 2002. While the UNEP Working Group of Experts considered the meaning of "environmental damage", this may not be synonymous with "damage to biodiversity". The inclusion of damage to biodiversity as a head of liability in national and international law is virtually unknown.

8. Many of the other international civil liability treaties specify the nature of the damage for which liability can be incurred under the agreement. Most of the older agreements only include the traditional heads of damage, i.e. damage to person or property and economic loss. Some of the newer agreements also include environmental damage. The annex to this document includes definitions of 'damage' or related concepts from numerous relevant treaties.

9. The Group of Legal and Technical Experts on Liability and Redress in the Context of Paragraph 2 of Article 14 of the Convention on Biological Diversity at its meeting in 2005 also considered the issue of damage to biological diversity and arrived at a number of pertinent conclusions. These were: that a mere change in the state of biological diversity might not necessarily constitute damage; to constitute damage, the change had to result in an adverse or negative effect and it should be measurable; that information on baseline conditions for determining and measuring change was often not available and in its absence, other methodologies for measuring change would be needed; and that some environmental changes do not manifest themselves immediately so the issue of linking actors and long-term environmental effects also arises. 2/ Experts within the Group also noted: that the concept of damage to biological diversity should reflect the definition of "biological diversity" as contained in Article 2 of the Convention; that the concept should incorporate negative changes in variability or diversity; that the term 'variability' in the definition was overly broad and unworkable; and that there is a need to take into account the definition of 'biodiversity loss' in decision VII/30 of the Conference of the Parties. 3/ The Group also discussed the 2004 European Community directive on liability with regard to the prevention and remedying of environmental damage, which is described in more detail in part III A of this document. Finally, experts also raised the issue of the necessity of baseline data. 4/

10. A related issue is the threshold at which damage will be considered to have occurred and liability may therefore be imposed. Experts from the Group of Legal and Technical Experts on Liability and Redress in the Context of Paragraph 2 of Article 14 of the Convention on Biological Diversity made several notes to this end. They noted that the concept of threshold needed to be linked to the variability of ecosystems and be determined on a case-by-case basis; that threshold was a subjective concept depending on the context; that threshold could be qualitative or quantitative; and that a level of significance to the damage was essential. 5/ They suggested a list of factors that might need to be taken into consideration in assessing the significance of damage including the geographic scale of the damage; the resources affected; the resilience of those resources; the vulnerability of the ecosystem; the degree and length of change (reversible or irreversible); and the value and uniqueness of the resources. 6/

11. The Group also pointed out a set of elements that should be taken into consideration if the Conference of the Parties wishes to provide further guidance in the area of damage to biological diversity:

1/ "Liability & Compensation Regimes Related to Environmental Damage: Review by UNEP Secretariat" (For an Expert Meeting, 13-15 May 2002, Geneva) at p. 27.

2/ *Report of the Group of Legal and Technical Experts on Liability and Redress in the Context of Paragraph 2 of Article 14 of the Convention on Biological Diversity*, UNEP/CBD/COP/8/27/Add.3 at para. 19.

3/ *Ibid.* at para. 20.

4/ *Ibid.* at para. 22.

5/ *Ibid.* at paras. 30 and 31.

6/ *Ibid.* at para. 32.

(a) Change may not necessarily equal damage;

(b) To qualify as damage, the change needs:

(i) To have an adverse or negative effect;

(ii) To be present over a period of time, that is, it cannot be redressed through natural recovery within a reasonable period of time;

(c) Baselines are needed against which to measure change;

(d) Other methods are needed for measuring change where baselines are not available;

(e) The need to distinguish between natural variation and human-induced variation;

(f) The need to reflect the definition of biological diversity in Article 2 of the Convention, that is, "the variability among living organisms from all sources including, *inter alia*, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems";

(g) The need to factor in the definition of biodiversity loss in decision VII/30;

(h) The issue of thresholds of significance of the damage. 7/

12. The question has also been raised whether the concept of 'damage to the conservation and sustainable use of biological diversity' is distinct from the concept of 'damage to biological diversity'. The former refers to an activity ('conservation and sustainable use') while the latter refers to a thing ('biological diversity') suggesting that there is a difference between the two. The term 'conservation' is not *per se* defined in the Convention but Article 2 does include definitions of *in-situ* and *ex situ conservation* suggesting that the concept of "conservation" in the phrase "damage to conservation" could refer to these two categories. 'Sustainable use' is defined in Article 2 of the Convention but the definition is not very precise. 8/

13. Questions have also been raised about the definition of 'biological diversity'. It is defined very broadly in the Convention to include "the variability among living organisms from all sources including, *inter alia*, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems." If liability and redress under the Biosafety Protocol is for damage to biological diversity as defined in the Convention then some means will need to be found to measure injury to the 'variability among living organisms'. This concept of injury to variability is also new to the field of liability and redress.

14. The United Nations Compensation Committee in its work on Iraq's liability for environmental damage from the invasion and occupation of Kuwait has also considered the meaning of 'environmental damage'. In its June 2005 report and recommendations on the so-called "F4" claims, 9/ the Panel of Commissioners considered whether claims for damage to natural resources without commercial value were compensable. The Panel framed the issue as follows: "the Panel considers that the fundamental issue to be resolved is whether, pursuant to Security Council resolution 687 (1991), claimants who suffer damage to natural resources that have no commercial value are entitled to compensation beyond

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7/ *Ibid.* at Annex, para. 6.

8/ Alfonso Ascencio, "The Transboundary Movement of Living Modified Organisms: Issues Relating to Liability and Compensation" 1997 6(3) Review of European Community and International Environmental Law 293 at p. 298.

9/ United Nations Compensation Commission Governing Council, *Report and Recommendations made by the Panel of Commissioners Concerning the Fifth Instalment of "F4" Claims*, doc. S/AC.26/2005/10 (30 June 2005). "F4" claims are claims for damage to the environment.

reimbursement of expenses incurred or to be incurred to remediate or restore the damaged resources. In other words, the question is whether the term "environmental damage", as used in Security Council resolution 687 (1991), includes what is referred to as "pure environmental damage"; i.e., damage to environmental resources that have no commercial value." 10/

15. The Panel concluded that the concept of "environmental damage and the depletion of natural resources" as used in Security Council resolution 687 (1991) means any loss of or damage to natural resources that can be demonstrated to have resulted directly from Iraq's invasion and occupation of Kuwait. The Panel did not consider there to be "anything in the language or context of Security Council resolution 687 (1991) or Governing Council decision 7 that mandates or suggests an interpretation that would restrict the term "environmental damage" to damage to natural resources which have commercial value." 11/ Iraq had argued that awarding compensation for a claim for interim loss of non-commercial environmental resources would be a revolutionary change in international law. The Panel disagreed and found that the assertion that general international law precludes compensation for pure environmental damage was not justified and that the exclusion of compensation for pure environmental damage in some international conventions on civil liability and compensation did not illustrate a general principle of international law to this effect. 12/

16. Iraq's arguments had initially been stated in terms of the temporal nature of the damage, i.e., that interim loss or damage to natural resources should not be compensable. The Panel also found that whether the loss or damage that was temporary in nature did not have any relevance to the issue of compensability of this loss or damage. 13/

III. NATIONAL EXPERIENCES AND CASE-STUDIES

A. The European Environmental Liability Directive

17. In 1993, the European Commission presented a "Green Paper on remedying environmental damage" (COM(93) 47 final), which sought to implement the polluter pays principle – one of the key environmental principles in the 1957 *Treaty establishing the European Community* (as amended) – through the creation of a civil liability regime. After further review and comments, the Commission published a "White Paper on Environmental Liability" (COM(2000) 66 final). The process culminated in *Directive 2004/35/CE of the European Parliament and of the Council of 21 April 2004 on environmental liability with regard to the prevention and remedying of environmental damage*, which entered into force on 30 April 2004.

18. Preambular paragraph 14 of the Directive states that the Directive does not apply to cases of personal injury, damage to private property or economic loss, i.e. non-environmental heads of liability. Article 2 defines the meaning of 'environmental damage' and 'damage' under the Directive:

1. "Environmental damage" means:

(a) Damage to protected species and natural habitats, which is any damage that has significant adverse effects on reaching or maintaining the favourable conservation status of such habitats

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10/ *Ibid.* at para. 52.

11/ *Ibid.* at para. 55.

12/ *Ibid.* at para. 58.

13/ *Ibid.* at para. 56.

or species. The significance of such effects is to be assessed with reference to the baseline condition, taking account of the criteria set out in annex I;

(b) Damage to protected species and natural habitats does not include previously identified adverse effects which result from an act by an operator which was expressly authorised by the relevant authorities in accordance with provisions implementing Article 6 paragraphs 3 and 4 or Article 16 of Directive 92/43/EEC or Article 9 of Directive 79/409/EEC or, in the case of habitats and species not covered by Community law, in accordance with equivalent provisions of national law on nature conservation;

(c) Water damage, which is any damage that significantly adversely affects the ecological, chemical and/or quantitative status and/or ecological potential, as defined in Directive 2000/60/EC, of the waters concerned, with the exception of adverse effects where Article 4 paragraph 7 of that Directive applies;

(d) Land damage, which is any land contamination that creates a significant risk of human health being adversely affected as a result of the direct or indirect introduction, in, on or under land, of substances, preparations, organisms or micro-organisms;

2. "Damage" means a measurable adverse change in a natural resource or measurable impairment of a natural resource service which may occur directly or indirectly.

19. Under these definitions, the scope of environmental damage is quite broad – including protected species, natural habitats, water damage, and land damage (including human health) – but also quite specific, limiting the scope of these categories to specific lists of species or habitats in other Directives. The scope of the Directive is further narrowed in Article 3 where it is defined to apply only to:

(a) Environmental damage caused by a certain set of occupational activities listed in annex III to the Directive, or to any imminent threat of damage occurring by reason of any of the activities; or

(b) Damage to protected species and natural habitats caused by other occupational activities besides those listed in the annex and any imminent threat of such damage occurring by reason of any of the activities, whenever the operator has been at fault or negligent.

21. The scope of the Directive does not apply only to liability for environmental damage that has already occurred but also to such damage that is imminent. Furthermore, two of the activities listed in annex III are "[a]ny contained use, including transport, involving genetically modified micro-organisms as defined by Council Directive 90/219/EEC of 23 April 1990 on the contained use of genetically modified micro-organisms" and "[a]ny deliberate release into the environment, transport and placing on the market of genetically modified organisms as defined by Directive 2001/18/EC of the European Parliament and of the Council" (paras. 10 and 11). Finally, Article 4 on 'exceptions' limits the extent to which the Directive applies to environmental damage or imminent threats thereof caused by pollution of a diffuse character to situations "where it is possible to establish a causal link between the damage and the activities of individual operators" (Art. 4(5)).

22. It should also be noted that Article 18 of the Directive requires the Commission to submit a report to the European Parliament and Council in 2014 that includes a review of the application of the Directive "to environmental damage caused by genetically modified organisms (GMOs), particularly in light of experience gained within relevant international fora and Conventions, such as the Convention on Biological Diversity and the Cartagena Protocol on Biosafety, as well as the results of any incidents of environmental damage caused by GMOs" (Article 18 paragraph 3 (b)).

B. The United States

23. The *Comprehensive Environmental Response, Compensation and Liability Act* (CERCLA) was enacted in the United States in 1980 in order to create a remedy for natural resource injuries that are not compensable through private litigation. 14/ It imposes liability for, *inter alia*, clean-up costs and "damages for injury to, destruction of, or loss of natural resources …" resulting from the release of a hazardous substance. 15/ "Natural resources" is broadly defined in the Act and includes "land, fish, wildlife, biota, air, water, ground water, drinking water supplies, and other such resources". 16/ An injury is "a measurable adverse change, either long- or short-term, in the chemical or physical quality or the viability of a natural resource…".17/ This can include simple things like the death of wildlife or the destruction of vegetation but also more complex injuries such as adverse changes in growth, health and biological condition of fish and wildlife, and the loss of reproductive capacity of these species; adverse changes in the physical quality and structure of habitats and non-living natural resources such as beaches and surface waters; and the impairment of natural resource services. 18/ In addition to restoration costs for the types of injuries described above, the trustees named under the Act are also entitled to recover for damages for interim loss of the use of a natural resource and reasonable costs for assessing natural resource damage.

24. The American state of Vermont has also been debating a bill called the *Farmer Protection Act*. The full name of the proposed legislation is "An Act Relating to Liability Resulting from the use of Genetically Engineered Seeds and Plant Parts". The bill proposes new rules on liability for manufacturers of genetically modified seeds and plant parts that are released in the state and cause injury. 'Injury' as defined in the bill includes:

(a) Loss of any price premium that would have accrued to a farmer by contract or other marketing arrangement or that would have been otherwise reasonably available to the person through ordinary commercial channels;

(b) Any reasonable additional transportation, storage, handling, or related charges or costs incurred by the contaminated farmer that would not have been incurred in the absence of crop contamination;

(c) Any judgment, charge, or penalty for which the farmer of nongenetically engineered products is liable because of breach of contract, including loss of organic certification.

One version of the bill was passed by the Vermont House of Representatives in January 2006. It imposes simple liability on manufacturers. This version of the bill conflicts with an earlier version passed by the Senate in 2005 that imposes strict liability on manufacturers. A Conference Committee will now be formed with members from both the House and the Senate in order to try to agree to a compromise bill.

C. Norway

25. The Norwegian *Gene Technology Act* of 1993 creates liability for damage caused by GMOs:

14/ Edward H.P. Brans, *Liability for Damage to Public Natural Resources: Standing, Damage and Damage Assessment* (The Hague: Kluwer Law International: 2001) at p. 65.

15/ 42 U.S.C. §9607(a)(4)(A) & (C).

16/ 42 U.S.C. §9601(6).

17/ 43 C.F.R. §11.14(v).

18/ Brans, *supra* note 14 at p. 95.

(a) The person responsible for an activity pursuant to the present Act has liability for damages regardless of any fault on his part when the activity causes damage, inconvenience or loss by deliberate release or emission of genetically modified organisms into the environment;

(b) Moreover the provisions of Chapter 8 of the Pollution Control Act concerning compensation for pollution damage apply insofar as they are appropriate (Ch. 4-23).

26. The appropriate provisions of the Pollution Control Act include requiring compensation for: financial losses resulting from pollution damage; damage, losses, nuisance or expenses incurred as a result of taking reasonable measures to prevent, limit, remove or mitigate pollution damage; damage, loss or nuisance resulting from the fact that the pollution prevents or impedes the exercising of rights of common for commercial purposes; pollution that hinders, impedes or limits the benefit of exercising rights of common for non-commercial purposes; and loss suffered by an employee because the pollution results in work stoppages, etc. 19/

27. The Gene Technology Act does not define what is meant by 'damage' but preparatory work for the Act stated that the term 'damage' was intended to cover damage to persons, objects and property as well as "changes in the ecological environment that occur, for example, when a new organism supplants an indigenous species." 20/

D. South Africa

28. The 1997 *Genetically Modified Organisms Act* from South Africa includes a very brief provision on liability. Section 17 of the Act addresses the determination of risk and liability. Paragraph 1 creates an obligation on users to "ensure that appropriate measures are taken to avoid an adverse impact on the environment which may arise from the use of genetically modified organisms." Paragraph 2 places the liability for damage caused by the use or release of a GMO on the user concerned. This provision does not apply where the organism concerned was in the possession of an inspector when the damage was caused.

20. The definition of 'user' in the Act is very broad and includes natural and legal persons and institutions responsible for the use of GMOs, including end-users and consumers (s. 1(xxviii)). 'Damage' is not defined in the Act

E. Brazil

21. Brazilian Law No. 11.105 from 24 March 2005 provides for safety norms for activities involving GMOs. Chapter VII contains provisions on civil and administrative responsibility and Article 20 creates liability for environmental damage and damage to third parties. Those who can be held liable under the Article are those who are accountable for the damage. They can be required to pay compensation or full recovery for the damage. The Law does not define any more specifically what constitutes 'environmental damage' or 'damage to third parties'.

22. Subsequently, the Brazilian President signed Decree no. 5.591 on 22 November 2005. The Decree contributes to the implementation of Law No. 11.105 and further regulates the safety norms and control mechanisms over the use, transport, production, storage, research and release into the environment of GMOs. Chapter VIII contains provisions on civil and administrative responsibility. Article 68 essentially repeats Article 20 from the Law. Again it places liability for environmental damage and

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19/ *Liability and redress (Article 27): Compilation of information on national, regional and international measures and agreements in the field of liability and redress for damage resulting from the transboundary movements of living modified organism*, UNEP/CBD/ICCP/3/INF/1 at p. 25.

20/ *Ibid*.

damage to third parties on those accountable for the damage and they can be required to pay compensation or full recovery. The Decree does not define any more specifically what is 'environmental damage' or 'damage to third parties'. It does, however, contain a list of administrative infractions, which relate primarily to requirements for authorization from Brazil's National Technical Committee on Biosafety (CTNBio), and possible sanctions for these infractions.

23. According to Vieira, the 1981 Brazilian National Policy for the Environment (which has been enacted into law) may offer some guidance for interpreting the meaning of environmental damage. The Policy includes definitions of 'degradation of environmental quality' and 'pollution', which Vieira combines to suggest a definition of damage such as "the alteration, deterioration, or destruction, partial or total, of any environmental resources, adversely affecting man and/or nature." 21/

F. Hoffman vs. Monsanto Canada Inc. 22/

24. The case of *Hoffman v. Monsanto Canada Inc.* is a Canadian case from the province of Saskatchewan. It involves a group of organic farmers seeking certification as a class in order to launch class action proceedings against Monsanto Canada Inc. and Bayer Cropscience Inc. for a variety of claims under both common law tort rules and statutory environmental liability provisions.

25. The facts in the case are as follows. In the mid-1990s, both Monsanto and Bayer received approval from Agriculture and Agri-Foods Canada to release genetically modified varieties of canola. Monsanto's variety contains a gene that confers resistance to its glyphosate herbicide Roundup. The modified canola variety is known as Roundup Ready canola. Bayer's variety contains a gene that confers resistance to its glufosinate ammonium herbicide Liberty. The modified canola variety is known as Liberty Link canola.

26. The organic farmers argue that the release of Monsanto's and Bayer's genetically modified canola varieties has resulted in the spread of the genes conferring herbicide resistance as well as the spread of canola plants containing these genes. The scope of this spread includes the genes being found in the otherwise-organic canola crops of organic farmers as well as volunteer canola plants exhibiting herbicide resistance growing in fields of other organic crop types. According to various organic certification standards as well as the demands of the organic export market, crops must be free of GMOs and introduced genes in order to be classed as organic. Foods meeting the organic standard can be sold at a premium.

27. The statement of claim of the organic farmers includes six bases on which they seek to impose liability on Monsanto and Bayer. These are: negligence, the rule in *Rylands v. Fletcher,* 23/ nuisance, trespass, *The Environmental Management and Protection Act* of Saskatchewan, and *The Environmental Assessment Act* of Saskatchewan. All but trespass are discussed below.

28. It is important to point out a few characteristics of this case and this decision before proceeding to present its discussion of damage. First, this may not be a case of damage from transboundary movements of LMOs. The allegations appear to concern a situation that occurred within Canada and likely within the

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21/ Susana Vieira, "Environmental Damage Evaluation in Brazil" in Michael Bowman & Alan Boyle, *Environmental Damage in International Law and Comparative Law* (Oxford: Oxford University Press, 2002) 297 at p. 302.

22/ *Hoffman v. Monsanto Canada Inc.,* 2005 SKQB 225 (CanLII).

23/ *Rylands v. Fletcher* (1866), L.R. 1 Ex. 265; (1868), L.R. 3 H.L. 330.

province of Saskatchewan. 24/ Secondly, for the most part, the farmers are not alleging that the modified canola varieties are hazardous to or unsafe for the environment or human health. Rather, their claims are largely founded on issues of damage to property and economic damage. This is not necessarily exclusively the case, however, and this point will be discussed in more detail below. Finally, this decision from the Saskatchewan Court of Queen's Bench is not a decision on whether or not Monsanto and Bayer should be held liable for the alleged damage. Instead, the decision concerns whether or not to grant certification as a class to organic farmers in Saskatchewan. In Saskatchewan the question of whether or not to certify a class necessarily involves an examination of the claims to determine whether it is 'plain and obvious' that they would fail at trial. The judge thus engaged in a preliminary discussion of the questions of law at issue in the plaintiffs' statement of claim. Ultimately, the judge ruled that it was plain and obvious that four of the farmers' six claims would fail at trial. In the remainder of the decision, however, the court found that other requirements for certification were not met so the application was dismissed. Leave to appeal the decision has been granted and the Court of Appeal for Saskatchewan should hear the appeal sometime in 2006. It is anticipated that whichever side wins on appeal, the other party will appeal the decision to the Supreme Court of Canada.

1. Negligence

29. Under this claim, the farmers allege that they are owed a duty of care by Monsanto and Bayer to ensure that genetically modified canola does not infiltrate and contaminate farmland where it is not intended to be grown. They allege that Monsanto and Bayer have breached this duty.

30. The farmers claim that the damages caused by the breach derive from the damages and loss of revenues caused by:

- Loss of canola as a crop to be used within their regular rotations;
- Loss of opportunity to participate in the certified organic canola market; and
- Past and future cleanup costs caused by Roundup Ready or Liberty Link canola volunteers growing on the fields of organic farmers.

31. In this case, in order to sustain their claim that the alleged duty of care is owed to them, the pleadings of the farmers must show reasonably foreseeable harm and relational proximity. There must also not be any policy reasons that would inhibit the court from imposing liability on the defendants. The court was uncertain whether the loss and damage alleged by the farmers was foreseeable but was willing to assume that the pleadings supported the allegation for the purposes of certification of the class. The court found that the plaintiffs failed on the proximity test, however. Furthermore, the court found that there were two policy considerations that would limit imposing the alleged duty of care on the defendants: the fact that the release of the genetically modified varieties of canola had been approved by the federal government, and the reluctance of common law courts to sustain claims for pure economic loss.

2. The Rule in Rylands v. Fletcher

32. The court described the elements required in a cause of action under the rule in *Rylands v. Fletcher* as follows:

24/ The questions over this point concern the locations of the defendants, where the canola varieties at issue were developed, and whether movements of LMOs across provincial boundaries within Canada would constitute 'transboundary movements'. Monsanto Canada Inc. has its principal place of business and registered office in Mississauga, Ontario but is a subsidiary of Monsanto Company, a corporation pursuant to the laws of the State of Delaware in the United States, and having a principal place of business in St. Louis, Missouri also in the U.S. Bayer Cropscience Inc. is the legal successor to, *inter alia*, Aventis Cropscience Canada Holding Inc. and Aventis Cropscience Canada Co., both of which had registered offices in Regina, Saskatchewan but were subsidiaries of Aventis S.A., a corporation pursuant to the laws of France and having a principal place of business in Strasbourg, France. Bayer Cropscience is a subsidiary of Bayer AG headquartered in Leverkusen, Germany.

> the defendant has made a non-natural use of its land; (ii) the defendant brought onto his land something which was likely to do mischief if it escaped; (iii) the substance in question escaped; and (iv) damage was caused to the plaintiff's property or person as a result of the escape. 25/

The court found that it could not be reasonably argued that the commercial release and sale of Roundup Ready and Liberty Link canola "constituted an "escape" of a substance, dangerous or otherwise, from property owned or controlled by the defendants in the sense of 'escape' required by the rule in *Rylands v. Fletcher*." 26/ Because the court dismissed the claim on interpretation of the word 'escape', it did not consider the issue of damage.

3. Nuisance

33. A claim of nuisance can be based on conditions or activities that cause physical injury or damage to land or that interfere with the use or enjoyment of land without actual physical damage. The court interpreted the farmers' claims as resting on both aspects of nuisance but found equally that for both these aspects, "there is authority for the proposition that no action can be brought by a plaintiff who is unduly reactive to the defendant's conduct because he is carrying on a business or operation that is particularly sensitive to the kind of intervention that is in question." 27/

34. In response to the farmers' claim, Monsanto and Bayer made two arguments. First, they argued that the alleged damage was not caused by the release of GM canola but by the actions of the organizations promulgating the standards for organic certification – standards that have been affected by what the companies consider the "inevitable adventitious presence of GM canola" – and by the individual farmers who chose to follow these standards. 28/ Related to this point is the argument that the alleged injury or interference is not sufficiently "unreasonable" or "substantial" to support a claim in nuisance. The defendants argued that open-pollinating crops are a normal part of agriculture in Saskatchewan, pollen flow is natural, the release of GM canola was subject to federal approval and the growing of GM canola is widespread. Thus it was a 'usual and ordinary' activity. Finally, "the activities of organic farmers are said to raise the issue of hypersensitivity". 29/

35. The second argument by the defendants was that no harm can be said to have been caused by the mere sale or marketing of GM canola. The release of the canola varieties by the defendants may have been necessary for the alleged harm to have occurred but it was not sufficient in and of itself. The intervention of neighbouring farmers who cultivated the GM canola was required for it to spread to the fields of the organic farmers.

36. The court did not feel that the first argument made it plain and obvious that the plaintiffs' claim would fail. The analogy to the contamination of land by weeds was felt to be too close to the farmers' arguments and should be assessed by a trial judge in light of all the evidence. On the second argument, however, the court did find it plain and obvious that the claim of nuisance would fail because the plaintiffs needed to have alleged direct causation of the alleged damage. Without this link, the implication would be that a manufacturer could be held liable in nuisance for damage caused by the use of its product, which is very broad grounds for finding nuisance particularly where the presence of GM canola in organic crops was not alleged to be harmful *per se* and neither are the defendants alleged to have failed to conform with requirements imposed on them.

25/ *Hoffman, supra* note 22 at para. 91.

26/ *Ibid.* at para. 97.

27/ *Ibid.* at para. 104.

28/ *Ibid.* at para. 106.

29/ *Ibid.* at para. 107.

4. The Environmental Management and Protection Act

37. The analysis of the court under this cause of action has two facets: whether a cause of action is disclosed under the original *Environmental Management and Protection Act* (EMPA), and whether a cause of action is disclosed under the new EMPA that replaced the original Act in 2002.

38. The court found that in order to establish a claim for liability for loss or damage under the EMPA, the farmers' must allege and prove:

(a) That the GM canola varieties of the defendants are "pollutants" within the meaning of the Act;

(b) That immediately before the first discharge of the "pollutant", the defendants were either the "owners" of the pollutants or "persons having control" of the pollutants;

(c) That the "pollutant" has been "discharged";

(d) That the discharge of the pollutant has been into the "environment";

(e) That the discharge has caused loss or damage to the plaintiffs. 30/

39. The plaintiffs argued that it was not necessary for them to allege or prove that GM canola is harmful or unsafe except to the extent of alleging that the spread of the canola into the farmers' organic fields and crops has caused damage or loss in the form of the loss of the market for organic canola and the costs of removing volunteer GM canola plants. They also indicated, however, that if the court did not accept this view, they were prepared to amend their statement of claim to allege that GM canola is inherently unsafe. The court did not support the former argument but concluded that if the statement of claim were amended as proposed, it was no longer plain and obvious that the plaintiffs' claim would fail at trial.

40. In examining whether there had been a "discharge" into the environment, the court found that simply marketing a product did not constitute a discharge. The court also examined whether Monsanto and Bayer could be the owners or the persons having control of the pollutant as was also required under the Act. The plaintiffs argued that the companies' patents over genes in their canola varieties as well as the technology use agreements that farmers must sign in order to gain access to seeds of these varieties meant that the companies retained ownership or control. The court disagreed and found the allegations insufficient to support the claim.

41. The original EMPA was replaced by the EMPA, 2002, which is significantly different from its predecessor and, according to the court, appears to substantially broaden the scope for civil liability. The court states the relevant provision on civil liability as follows: "… any person … has a right to compensation from … the person responsible for a discharge for loss or damage incurred as a result of … the discharge of a substance". 31/ Notably, there is no requirement for the "substance" to cause adverse effects as there is in other parts of the Act. Under section 15 paragraph 1, "loss or damage" is defined to include personal injury, loss of life, loss of use or enjoyment of property, and pecuniary loss, including loss of income. The definition of "substance" in the new Act does not refer to harmful or unsafe attributes. The court was inclined to interpret s. 15 paragraph 3 (a)(i) of the Act in light of s. 4 paragraph 1 which creates criminal or quasi-criminal liability. The latter section requires adverse effects in order to impose liability for the discharge of a substance and also allows discharges that cause adverse effects if

30/ *Ibid.* at para 138.

31/ *Ibid.* at para. 162, quoting s. 15(3)(a)(i).

these are authorized by government. Nonetheless, within the wording of s. 15, the court was unable to conclude that it was plain and obvious that the plaintiffs' claim would fail.

5. The Environmental Assessment Act

42. *The Environmental Assessment Act* (EAA) requires the proponent of a "development" to conduct an environmental impact assessment and obtain ministerial approval prior to proceeding with the development. The plaintiffs alleged that the testing and unconfined release of GM canola in Saskatchewan was a development and that the defendants had not conducted the necessary environmental impact assessment or obtained approval and so were liable for any loss or damage suffered by the plaintiffs as a result of the development.

43. The court found that the testing and unconfined release of GM canola could constitute a development under the Act as they could be a project, operation or activity that could "cause widespread public concern because of potential environmental changes" (s. 2(d)(iv)) – one of the grounds for something to be considered a development. The court also found that it was not plain and obvious that the plaintiffs' claims of liability for economic loss and damage from the presence of volunteer GM canola plants on their land would fail.

G. In re StarLink Corn Products Liability Litigation 32/

44. The *In re StarLink Corn Products Liability Litigation* involved a group of corn farmers in the United States who brought suit against Aventis CropScience USA Holding, Inc., and Garst, a licensee of Aventis. Aventis had created a GMO variety of corn – known as StarLink – that was approved in 1998 by the Environmental Protection Agency (EPA) for certain uses such as animal feed but was not approved for human consumption. StarLink produced a protein known as Cry9C that had attributes similar to known human allergens.

45. The limited approval or registration from the EPA made Aventis responsible for ensuring that StarLink was segregated from other corn, that there was a buffer around StarLink corn crops to prevent cross-pollination with non-StarLink corn plants, and that farmers were made aware through a number of means of the conditions on the cultivation and sale of StarLink corn. In the fall of 2000, human food products were found to contain the Cry9C protein. As a result, many United States food producers stopped using United States corn and a number of countries terminated or limited their imports of United States corn.

46. In their suit, the farmers alleged that the defendants disseminated a product that contaminated the corn supply, increasing farming costs and depressing corn prices, and they sought to recover damages on the basis of negligence, strict liability, nuisance, conversion, the *North Carolina Unfair Trade Practices Act*, and the *Tennessee Consumer Protection Act*.

47. As with the Hoffman decision described above, this decision is not a decision on the merits. Instead, it is a decision on a motion to dismiss by the defendants. In similar fashion to the Saskatchewan Court of Queen's Bench, the United States District Court, Northern District of Illinois, Eastern Division had to assess the plaintiffs' claims to determine their likely success at trial in order to decide whether or not to dismiss these claims. The judge granted the motion to dismiss with respect to the claims for conversion and violations of the *North Carolina Unfair Trade Practices Act*. The motion to dismiss was denied with respect to the claims for negligence *per se*, public nuisance, private nuisance and violations of

32/ *In re StarLink Corn Products Liability Litigation, Marvin Kramer, et al. v. Aventis CropScience USA Holding, Inc. et al.*, 212 F.Supp.2d 828 (2002).

the *Tennessee Consumer Protection Act.* The negligence and strict liability claims were dismissed to the extent they relied on failure to warn. The claims of negligence and nuisance are discussed below.

48. Before turning to the court's discussion of these claims, however, the preliminary discussion of the court on 'economic loss doctrine' must first be addressed. The court reiterated the common law position that "[p]hysical injuries to persons or property are compensable; solely economic injuries are not." 33/ The corollary to the economic loss rule, however, "is that it does not bar claims for injuries to other property, or claims alleged in combination with non-economic losses." 34/ Thus, while the plaintiffs could not recover for pure economic losses such as a drop in market price or additional costs like testing procedures imposed by the market, they may have been able to recover some economic losses if they could prove direct harm to their property.

1. Negligence

49. The defendants argued that their conduct was too remote or too far removed from any effect StarLink may have had on corn markets in order for them to be held liable in negligence. The court characterized the duty alleged against the defendants as a duty to prevent contamination with the effects on corn markets as a way to measure damages resulting from a breach of this duty. The plaintiffs' allegation that Aventis breached its duty causing the plaintiffs' corn to be contaminated was sufficient to uphold the claim.

2. Private nuisance

50. The plaintiffs alleged "that defendants created a private nuisance by distributing corn seeds with the Cry9C protein, knowing that they would cross-pollinate with neighbouring corn crops." 35/ The court agreed that drifting pollen could constitute an invasion for the purpose of finding nuisance and that contaminating neighbours' crops interfered with their enjoyment of the land. The issue was thus whether the defendants were responsible for contamination caused by their product beyond the point of sale. The court found that all parties who substantially contribute to the nuisance are liable and that the unique obligations imposed by the limited registration for StarLink corn by the EPA arguably put Aventis in a position to control the nuisance. This was enough to sustain the claim.

3. Public nuisance

51. The plaintiffs also asserted that StarLink's contamination of the general food corn supply constituted a public nuisance. To state such a claim, the plaintiffs needed to allege "an unreasonable interference with a right common to the general public." 36/ The court found that while the general public has a right to safe food, the plaintiffs depended on the integrity of the corn supply for their livelihood. This was sufficient to state a different harm from that to the general public and maintain the claim.

52. In 2003, following the decision, the two sides reached a settlement. Aventis and Garst agreed to pay over US$100 million to the farmers without admitting or conceding to any wrongdoing or liability. The dispute did not proceed to trial.

H. The Patmos Case

53. On 21 March 1985, the Greek oil tanker *Patmos* and the Spanish tanker *Castillo de Monte Aragón* collided in the Strait of Messina. There are conflicting reports over how much oil the *Patmos*

33/ *Ibid.* at p. 838.

34/ *Ibid.* at p. 840.

35/ *Ibid.* at p. 844.

36/ *Ibid.* at p. 848 citing the Restatement (Second) of Torts § 821B(1).

spilled into the sea, although some oil did wash up on the coast of Sicily. The Italian authorities took measures to contain the spill and prevent damage to the coast. The Italian Ministry of the Merchant Marine lodged a claim for ecological damage against the International Oil Pollution Compensation Fund created under the 1971 *International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage*. The Fund rejected the claim on the basis that the Italian government had not suffered a quantifiable economic loss and because the claim was assessed on the basis of an abstract quantification. 37/

54. The Ministry of the Merchant Marine took the issue to court. Its claim rested, in part, on the definition of 'pollution damage' in Article I(6) of the 1969 *International Convention on Civil Liability for Oil Pollution Damage* ("CLC"): ""pollution damage" means loss or damage caused outside the ship carrying oil by contamination resulting from the escape or discharge of oil from the ship, wherever such escape or discharge may occur, and includes the costs of preventative measures and further loss or damage caused by preventative measures." 38/ The Government argued that the definition was broad enough to include ecological damage.

55. The Tribunal of Messina rejected the Ministry's claim but this was overturned on 30 March 1989 by the Court of Appeal of Messina, which recognized the State's claim for ecological damage and stated that this kind of damage is covered by the CLC. The Court of Appeal used another convention – the 1969 *International Convention relating to Intervention on the High Seas in Cases of Oil Pollution Casualties* – to interpret the definition of 'pollution damage' from the CLC. It found that the definition was broad enough to encompass damage to the coast and to the related interests of coastal states. These 'related interests' included environmental and ecological damage. 39/ The Court of Appeal stated that the environment represented a value on its own merit that was subject to legal protection even if this value could not be determined according to market prices. The government was thus awarded damages to compensate for the ecological damage that arose from the affected beneficial uses of the marine environment, for example, as a source of food, for tourism, health benefits, and scientific research, in addition to damages for the cost of the clean-up measures. 40/ Simply because these losses were difficult to compute did not mean that they should be barred from compensation.

37/ Brans, *supra* note 14 at p. 327.

38/ This definition should not be confused with the definition of "pollution damage" from the 1992 version of the Convention contained in Annex A to this document. The 1992 Convention replaced the 1969 Convention after this decision.

39/ Maria Clara Maffei, "The Compensation for Ecological Damage in the "Patmos" Case" in Francesco Francioni & Tullio Scovazzi, eds., *International Responsibility for Environmental Harm* (London: Graham & Trotman, 1991) 381 at p. 386. As if to highlight the confusion over the distinction between 'environmental damage' and 'ecological damage', Maffei describes the *Patmos* case as concerning 'ecological damage' although she acknowledges that the Court of Appeal used an Italian term equivalent to 'environmental damage'. She explains that the meaning of the term used by the Court corresponds to the meaning of 'ecological damage', Maffei, *supra*. In describing the same case, Brans uses the term 'environmental damage' to mean damage to the environment *per se*, Brans, *supra* note 14 at p. 327.

40/ *Identification of issues relating to liability and redress from damage resulting from the transboundary movement of living modified organisms: Note by the Executive Secretary*, UNEP/CBD/BS/WS-L&R/1/2 at p. 23.

Annex

DEFINITIONS OF 'DAMAGE' OR RELATED CONCEPT FROM OTHER INTERNATIONAL AGREEMENTS

International Convention on Civil Liability for Oil Pollution Damage, 1992
(International Maritime Organization)

Art. 1(6) "Pollution damage" means:

(a) loss or damage caused outside the ship by contamination resulting from the escape or discharge of oil from the ship, wherever such escape or discharge may occur, provided that compensation for impairment of the environment other than loss of profit from such impairment shall be limited to costs of reasonable measures of reinstatement actually undertaken or to be undertaken;
(b) the costs of preventive measures and further loss or damage caused by preventive measures.

International Convention on Civil Liability for Bunker Oil Pollution Damage, 2001 (not in force)
(International Maritime Organization)

Art. 1(9) "Pollution damage" means:

(a) loss or damage caused outside the ship by contamination resulting from the escape or discharge of bunker oil from the ship, wherever such escape or discharge may occur, provided that compensation for impairment of the environment other than loss of profit from such impairment shall be limited to costs of reasonable measures of reinstatement actually undertaken or to be undertaken; and
(b) the costs of preventive measures and further loss or damage caused by preventive measures.

Convention on Civil Liability for Oil Pollution Damage Resulting from Exploration for and Exploitation of Seabed Mineral Resources, 1977 (not in force)

Art. 1(6) "Pollution damage" means loss or damage outside the installation caused by contamination resulting from the escape or discharge of oil from the installation and includes the cost of preventive measures and further loss or damage outside the installation caused by preventive measures.

International Convention on Liability and Compensation for Damage in Connection with the Carriage of Hazardous and Noxious Substances by Sea, 1996 (not in force)
(International Maritime Organization)

Art. 1(6) "Damage" means:

(a) loss of life or personal injury on board or outside the ship carrying the hazardous and noxious substances caused by those substances;
(b) loss of or damage to property outside the ship carrying the hazardous and noxious substances caused by those substances;
(c) loss or damage by contamination of the environment caused by the hazardous and noxious substances, provided that compensation for impairment of the environment other

than loss of profit from such impairment shall be limited to costs of reasonable measures of reinstatement actually undertaken or to be undertaken; and

(d) the costs of preventive measures and further loss or damage caused by preventive measures.

Basel Protocol on Liability and Compensation for Damage Resulting from Transboundary Movements of Hazardous Wastes and their Disposal (not in force)
(United Nations Environment Programme)

Art. 2(2)(c) "Damage" means:

(i) Loss of life or personal injury;

(ii) Loss of or damage to property other than property held by the person liable in accordance with the present Protocol;

(iii) Loss of income directly deriving from an economic interest in any use of the environment, incurred as a result of impairment of the environment, taking into account savings and costs;

(iv) The costs of measures of reinstatement of the impaired environment, limited to the costs of measures actually taken or to be undertaken; and

(v) The costs of preventive measures, including any loss or damage caused by such measures, to the extent that the damage arises out of or results from hazardous properties of the wastes involved in the transboundary movement and disposal of hazardous wastes and other wastes subject to the Convention[.]

Convention on Civil Liability for Damage Caused During Carriage of Dangerous Goods by Road, Rail and Inland Navigation Vessels, 1989 (not in force)
(United Nations Economic Commission for Europe)

Art. 1(10) "Damage" means:

(a) loss of life or personal injury on board or outside the vehicle carrying the dangerous goods;

(b) loss of or damage to property outside the vehicle carrying the dangerous goods caused by those goods, to the exclusion of any loss of or damage to other vehicles in the same train of vehicles or any loss of or damage to property on board such vehicles;

(c) loss or damage by contamination to the environment caused by the dangerous goods, provided that compensation for impairment of the environment other than for loss of profit from such impairment shall be limited to costs of reasonable measures of reinstatement actually undertaken or to be undertaken;

(d) the costs of preventive measures and further loss or damage caused by preventive measures. Where it is not reasonably possible to separate damage caused by the dangerous goods from that caused by other factors, all such damage shall be deemed to be caused by the dangerous goods[.]

Convention on Third Party Liability in the Field of Nuclear Energy, 1960
(Organization for Economic Cooperation and Development)

Art. 3

a. The operator of a nuclear installation shall be liable, in accordance with this Convention, for:

(i) damage to or loss of life of any person; and

(ii) amage to or loss of any property other than

1. the nuclear installation itself and any other nuclear installation, including a nuclear installation under construction, on the site where that installation is located; and
2. any property on that same site which is used or to be used in connection with any such installation, upon proof that such damage or loss (hereinafter referred to as "damage") was caused by a nuclear incident in such installation or involving nuclear substances coming from such installation, except as otherwise provided for in Article 4.

b. Where the damage or loss is caused jointly by a nuclear incident and by an incident other than a nuclear incident, that part of the damage or loss which is caused by such other incident, shall, to the extent that it is not reasonably separable from the damage or loss caused by the nuclear incident, be considered to be damage caused by the nuclear incident. Where the damage or loss is caused jointly by a nuclear incident and by an emission of ionizing radiation not covered by this Convention, nothing in this Convention shall limit or otherwise affect the liability of any person in connection with that emission of ionizing radiation.

Vienna Convention on Civil Liability for Nuclear Damage, 1963, as amended by the Protocol to Amend the Vienna Convention on Civil Liability for Nuclear Damage, 1997
(International Atomic Energy Agency)

Art. I(1)(k) "Nuclear damage" means –

i. loss of life or personal injury;
ii. loss of or damage to property;

and each of the following to the extent determined by the law of the competent court –

iii. economic loss arising from loss or damage referred to in sub-paragraph (i) or (ii), insofar as not included in those sub-paragraphs, if incurred by a person entitled to claim in respect of such loss or damage;
iv. the costs of measures of reinstatement of impaired environment, unless such impairment is insignificant, if such measures are actually taken or to be taken, and insofar as not included in sub-paragraph (ii);
v. loss of income deriving from an economic interest in any use or enjoyment of the environment, incurred as a result of a significant impairment of that environment, and insofar as not included in sub-paragraph (ii);
vi. the costs of preventive measures, and further loss or damage caused by such measures;
vii. any other economic loss, other than any caused by the impairment of the environment, if permitted by the general law on civil liability of the competent court,

in the case of subparagraphs (i) to (v) and (vii) above, to the extent that the loss or damage arises out of or results from ionizing radiation emitted by any source of radiation inside a nuclear installation, or emitted from nuclear fuel or radioactive products or waste in, or of nuclear material coming from, originating in, or sent to, a nuclear installation, whether so arising from the radioactive properties of such matter, or from a combination of radioactive properties with toxic, explosive or other hazardous properties of such matter.

The same definition of damage is included in Article I(f) of the *Convention on Supplementary Compensation for Nuclear Damage, 1997* although this Convention is not yet in force.

Convention on International Liability for Damage Caused by Space Objects, 1971
(United Nations)

Art. I(a)

The term “damage” means loss of life, personal injury or other impairment of health; or loss of or damage to property of States or of persons, natural or juridical, or property of international intergovernmental organizations[.]

Convention on Civil Liability for Damage Resulting from Activities Dangerous to the Environment, 1993
(Council of Europe, not in force)

Art. 2(7) “Damage” means:

a. loss of life or personal injury;
b. loss of or damage to property other than to the installation itself or property held under the control of the operator, at the site of the dangerous activity;
c. loss or damage by impairment of the environment in so far as this is not considered to be damage within the meaning of sub-paragraphs a or b above provided that compensation for impairment of the environment, other than for loss of profit from such impairment, shall be limited to the costs of measures of reinstatement actually undertaken or to be undertaken;
d. the costs of preventive measures and any loss or damage caused by preventive measures,

to the extent that the loss or damage referred to in sub-paragraphs a to c of this paragraph arises out of or results from the hazardous properties of the dangerous substances, genetically modified organisms or micro-organisms or arises or results from waste.

Convention on the Regulation of Antarctic Mineral Resource Activities, 1988
(Part of the Antarctic Treaty System, not in force)

Art. 1(15) ‘Damage to the Antarctic environment or dependent or associated ecosystems’ means any impact on the living or non-living components of that environment or those ecosystems, including harm to atmospheric, marine or terrestrial life, beyond that which is negligible or which has been assessed and judged to be acceptable pursuant to this Convention.

Art. 8(2) An Operator shall be strictly liable for:

Damage to the Antarctic environment or dependent or associated ecoystems arising from its Antarctic mineral resource activities, including payment in the event that there has been no restoration to the status quo ante;

loss of or impairment to an established use, as referred to in Article 15, or loss of or impairment to an established use of dependent or associated ecoystems, arising directly out of damage described in subparagraph (a) above;

loss of or damage to property of a third party or loss of life or personal injury of a third party arising directly out of damage described in subparagraph (a) above; and

reimbursement of reasonable costs by whomsoever incurred relating to necessary response action, including prevention, containment, clean up and removal measures, and action taken to restore the status quo ante where Antarctic mineral resource activities undertaken by that Operator result in or threaten to result in damage to the Antarctic environment or dependent or associated ecosystems.

Draft Articles on Prevention of Transboundary Harm from Hazardous Activities, 2001
(International Law Commission)

Article 2(b) "Harm" means harm caused to persons, property or the environment;

Article 2(c) "Transboundary harm" means harm caused in the territory of or in other places under the jurisdiction or control of a State other than the State of origin, whether or not the States concerned share a common border"[.]

Kiev Protocol on Civil Liability and Compensation for Damage Caused by the Transboundary Effects of Industrial Accidents on Transboundary Waters to the 1992 Convention on the Protection and Use of Transboundary Watercourses and International Lakes and to the 1992 Convention on the Transboundary Effects of Industrial Accidents (not in force)
(UN Economic Commission for Europe)

Article 2(d) "Damage means:

(i) Loss of life or personal injury;
(ii) Loss of, or damage to, property other than property held by the person liable in accordance with the Protocol;
(iii) Loss of income directly deriving from an impairment of a legally protected interest in any use of the transboundary waters for economic purposes, incurred as a result of impairment of the transboundary waters, taking into account savings and costs;
(iv) The cost of measures of reinstatement of the impaired transboundary waters, limited to the costs of measures actually taken or to be undertaken;
(v) The cost of response measures, including any loss or damage caused by such measures, to the extent that the damage was caused by the transboundary effects of an industrial accident on transboundary waters[.]

United Nations Convention on the Law of the Sea, 1982

Article 1.1(4) "pollution of the marine environment" means the introduction by man, directly or indirectly, of substances or energy into the marine environment, including estuaries, which results or is likely to result in such deleterious effects as harm to living resources and marine life, hazards to human health, hindrance to marine activities, including fishing and other legitimate uses of the sea, impairment of quality for use of sea water and reduction of amenities[.]
