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**THE BIOSAFETY PROTOCOL:
THE REAL LOSERS ARE
DEVELOPING COUNTRIES**

FRANCES B. SMITH

PREFACE

Agricultural biotechnology is one of the most promising techniques of modern science. By adding nutrients to key crops such as rice, biotech can improve the health of millions of people. By building protection against insect predators into the crops themselves, it can limit the need for pesticides. By enhancing yields, it can reduce both hunger and the amount of land needed for farming, which leaves more available for forests, species preservation, and other environmental goals.

Biotech also offers major safety gains. The techniques themselves—such as gene splicing—present no inherent risk, and individual products are already regulated by multiple governmental agencies.

Nonetheless, biotech has foes. Some are motivated by fear of the unknown, which, for far too many people, includes all of science. Some want to suppress economic competition from new crops. Whatever their reasons, the foes are mounting a very serious campaign against agricultural biotechnology.

In January 2000, in Montreal, the friends and foes of biotech met to work out rules for international trade in commodities produced by these means. The resulting Protocol was hailed in the press with the new buzz word, “win-win.” However, as this issue of *BRIEFLY* . . . discusses, the pact contains a disturbing number of possible checks on the use of agricultural biotech, and it may turn out that the “win” was mostly for the opponents.

The author of this analysis is Frances B. Smith, Executive Director of Consumer Alert <www.consumeralert.org> and of a new organization, International Consumers for Civil Society <www.icfcs.org>. ICCS was founded to provide a counterbalance to the current flood of private entities which call themselves “NGOs” (for “non-governmental organizations”) but which seem to devote themselves mostly to promoting additional power for international regulatory bodies, at the expense of the free market, the international business community, the private sector in general, and the true interests of the world’s consumers.

Ms. Smith follows the biotech issue closely, and was in Montreal throughout the negotiations.

This monograph, like all publications of the National Legal Center, is presented as an educational public service to encourage greater understanding of a legal and public policy issue. It has no political purpose, and is designed only to enlighten its readers by giving them access to the thought, experience, and knowledge of others. The views expressed are those of the author and do not necessarily reflect the position of the officers or directors of the National Legal Center.

ERNEST B. HUETER, President
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FRANCES B. SMITH

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Editor

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**THE MISSION OF THE
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THE BIOSAFETY PROTOCOL: THE REAL LOSERS ARE THE DEVELOPING COUNTRIES

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[T]he sociology of the anti-[genetically modified food] movement is utterly familiar . . . : comfortable middle- and upper-class activists talking reverently about the . . . evils of modern agricultural methods. . . .

Too bad that the wretched of the earth will, as usual, pay the price for the fantasies of the affluent.

—Paul Krugman, “Reckonings: Natural Born Killers,”
New York Times, March 22, 2000

INTRODUCTION

It must be an iron law of public discourse. Whenever a public policy is hailed as a “win-win” agreement, the list of winners does not include either common sense or the public interest. And the louder the applause, the greater the problems.

The much-heralded recent Cartagena Protocol on Biosafety is a case in point.¹ After five years of negotiations, on January 29, 2000, in Montreal, Quebec, over 130 countries agreed to a global pact to help protect genetic resources from the threat of “living modified organisms” (LMOs) that are traded, transported, and used across national borders. LMOs include seeds, plants, animals, and other biological entities produced through modern biotechnology processes, such as gene splicing.

Policy makers, anti-biotechnology activists, and biotechnology industry groups all applauded the final agreement, calling it a great

¹The text of the Protocol can be found at <www.biodiv.org/biosafe/BIOSAFETY-PROTOCOL.htm>. It is called the “Cartagena Protocol” because the Montreal session was a continuation of a conference held in Cartagena in 1999. The title of the conference was the Resumed First Session of the Extraordinary Conference of the Parties to the Convention on Biological Diversity for a Biosafety Protocol.

victory. “It puts the environment and trade on the same footing,” said Canadian Environment Minister David Anderson.² U.S. Department of State Undersecretary for Global Affairs Frank Loy said, “I am particularly happy that the agreement managed to avoid the creation of costly and unworkable documentation requirements, and that the agreement emphasizes that regulatory decisions must be based on science.”³ Greenpeace representative Benedikt Haerlin called the agreement “a historic step towards protecting the environment and consumers from the dangers of genetic engineering.”⁴ The biotechnology industry representative, Joyce Groote, chair of the Global Industry Coalition (who was “pied” by protesters earlier in Montreal), commented, “I think that it will do what it was supposed to: protecting biodiversity without restricting trade.”⁵

News accounts the day after the agreement’s consummation hailed it as a major accomplishment and congratulated all parties for being so reasonable, even though few of these pundits could have reflected on its implications, or even read it, because the official text was not released until late February.

The Cartagena Protocol, dealing only with biotechnology, is a sub-agreement entered into under the broad 1992 United Nations Convention on Biological Diversity,⁶ which addresses conservation and sustainable use of genetic resources. (Hereafter, these two documents are called the Protocol and the Convention, respectively.)

The Protocol addresses a legitimate issue: nations’ need to be able to protect their ecosystems from threats, or even from the possibility of threats, presented by certain bioengineered products. However, any agreement that establishes a mechanism allowing countries to halt the movement of products produced through biotechnology clearly affects trade. At issue in the negotiations was finding a way to balance the

²BBC Online, Jan. 29, 2000 <www.bbc.co.uk>.

³U.S. Department of State, International Information Programs, Washington File, Jan. 30, 2000, website <pdq.state.gov/scripts/cqcgi.exe/@pdqtest1.env>.

⁴BBC Online, *op. cit.* note 2.

⁵*Id.*

⁶Convention on Biological Diversity, Text and Annexes (Montreal, Quebec: Secretariat of the Convention on Biological Diversity, Apr. 1998) <http://www.biodiv.org/chm/conv/cbd_text_e.pdf>.

goal of allowing countries to protect themselves from the possible hazards of biotech against the equally valid need to prevent them from using biosafety concerns as a pretext for restricting imports.

TERMINOLOGY

In discussions of biotechnology and agriculture, a number of terms are used which mean approximately the same thing.

The Protocol refers to Living Modified Organism (LMO), defined as “any living organism that possesses a novel combination of genetic material obtained through the use of modern biotechnology.” It then divides LMOs into classes, including “LMOs intended for release into the environment,” and “LMOs intended for food, feed, and processing.”

The term “LMO” is not commonly used in discussions of the topic, however. Other international bodies and the media say “Genetically Modified Organism” (GMO), or simply “GM crops” or “GM products.” This is not quite correct, because hybridization and cross-breeding, not just modern biotech, modify plants genetically, but those terms have come to mean the same thing as the Protocol’s definition of LMO. Other terms in common use are “genetically engineered,” “bioengineered,” and “biotech” (for Biotechnology), as in “biotech food.”

This paper uses LMO when it is referring specifically to the Protocol. Otherwise, depending on the context, it uses the more common GMO, GM, bioengineered, or biotech.

Another common term is “Bt,” as in “Bt corn,” “Bt cotton,” or “Bt potatoes.” This refers to crops into which a gene from the soil-borne bacterium *Bacillus thuringiensis* (Bt) has been inserted. Particular strains of the bacterium make their own toxins that selectively kill specific groups of insects. Thus the genetically modified corn plant—“Bt corn”—produces a protein from Bt that is toxic to such pests as the corn-borer caterpillar.

More than 160 nations signed the Convention in 1992-93, including the United States; however, the U.S. did not ratify it. Since the U.S. was not a Contracting Party to the Convention, it did not have an official vote in the Protocol negotiations. Its formal role at the meetings was “observer,” even though its influence was great.

The Protocol puts in place a range of restrictions on trade in materials produced through modern biotechnology, with agricultural commodities the main focus. The agreement:

- Establishes a Biosafety Clearing House on the Internet where countries can share information and access technical data on genetically modified organisms before they enter their markets.
- Requires strict notification, documentation, and risk assessment procedures for genetically modified organisms intended to be released into the environment, such as seeds, plants, or live fish. A country can ban imports of these if it feels there is not enough evidence to prove them safe, and the Protocol specifically incorporates the “precautionary principle” contained in Principle 15 of the 1992 Rio Declaration on Environment and Development. (The “precautionary principle” is discussed *infra*, at pages 14-18.)
- Mandates that export shipments of all genetically modified crops (commodities such as corn and soybeans) and fresh foods, even when they are not designed for release into the environment, must be labeled with a notice that they “may contain living modified organisms.”
- Agrees to take up possible detailed documentation and segregation of all genetically modified crops produced through biotechnology within two years.

The Protocol has major implications both for the technology addressed in the document and for world trade. It is the first major international agreement to use the precautionary principle explicitly to allow the restriction of trade in products because they were produced using a specific technology—biotechnology. The precautionary principle, however, is a one-way ratchet. It obsesses about imagined or potential risks of new technology or innovations while ignoring the real risks on the other side, the risks of restricting the development of technology. In the case of biotechnology, the risks of restricting its development will be borne not by the affluent in the developed world, but by people in developing countries, where agricultural biotechnology holds great promise in helping to alleviate starvation, providing nutrition-enhanced food staples, preserving tropical forests and habitats through higher crop yields, and reducing the need for costly fertilizers, herbicides, and pesticides.

While the agreement is supposed to be “mutually supportive” of other international agreements, such as those involving trade, the language in the Protocol describing these relationships is brief and ambiguous. The door is left open to challenges based on unscientific concerns. In addition, pressures are building for both the World Trade Organization and the organization to which it refers for scientific guidance in trade disputes—the Codex Alimentarius Commission—to include references to the precautionary principle in their agreements and statements of principles. Such retreats from the use of science in evaluating trade disputes would open the door to vague and nebulous claims.

The Protocol, with its single focus on the threats to biodiversity posed by biotechnology, also appears to conflict with its authorizing agreement, the Convention, which recognizes that biotechnology, while presenting risks, can contribute importantly to the goal of biological diversity.

The Protocol will be open for signatures from May 15-26, 2000 in Nairobi and from June 5, 2000 to June 4, 2001 in New York. It would enter into force 90 days after the fiftieth Party to the Convention has ratified it.

AGRICULTURAL BIOTECHNOLOGY—BACKGROUND

Modern biotechnology techniques for genetic modification of plants may involve inserting a gene with a desired characteristic into the chromosome of another plant. The gene can be from a different plant of the same species or even from another species. Compared with selective breeding through hybridization, which can be inexact and take many years to breed a plant with a specific trait desired, these modern gene-splicing techniques are fast, precise, and predictable.⁷

In some areas of application, such as pharmaceuticals, numerous products produced through biotechnology have been used for nearly 20 years. Early applications in pharmaceutical products were insulin for diabetics and clot-busting drugs for heart attack patients.

⁷See the U.S. Department of Agriculture website </www.aphis.usda.gov/biotechnology/faqs.html>.

The first approved genetically modified food ingredient was chymosin, which was approved by the U.S. Food and Drug Administration in 1990. A biotech enzyme used to coagulate milk in making cheese, chymosin is a substitute for an enzyme, rennet, which is taken from calves' stomach linings and used to make cheeses. Many other enzymes produced through modern biotechnology are now widely used in food and drinks such as beer.

Agricultural and fresh food products developed through biotechnology are bred for a variety of purposes: to be resistant to pests and diseases, to grow better under drought conditions, to grow in inhospitable or toxic soils, and other purposes.⁸ Major agricultural products using biotechnology that are currently in the market include corn, soybeans, cotton, canola, and rapeseed. Research and development of gene-spliced crops are performed under extremely controlled conditions and tight regulatory oversight—from the research laboratory through field trials and crop planting, as well as when a product is introduced for food use.⁹

While major biotechnology research facilities, both non-profit and profit-making, are located throughout the world, major crops using biotechnology, such as soy, corn, cotton, and canola, are grown principally in the U.S., Canada, and Argentina. In the U.S., since 1987 about 5,000 field trials of gene-spliced crops have been conducted and about 40 new agricultural products have been approved for commercial sale. In 1998 genetically engineered crops were grown on 50 million acres in the U.S.¹⁰

BIOTECHNOLOGY—THE CONTROVERSY

Over the last several years, agricultural and food products produced through biotechnology have been under heavy attack, particularly in

⁸*Id.*

⁹For descriptions of the U.S. Food and Drug Administration's, the Environmental Protection Agency's and the Department of Agriculture's roles in regulating biotechnology, see links in the website: <www.aphis.usda.gov/biotech/OECD/usregs.htm>.

¹⁰*Id.*

Europe. In the United Kingdom, especially, anti-biotechnology activists have waged major campaigns to halt the sale of bio-engineered food, destroyed farmers' field trials, and called for both labeling and banning of such products. The London tabloids, sensing blood, ran full-scale campaigns against food produced through biotechnology.¹¹

The European Union (EU) responded to activists' pressures and to a public whipped up to near-hysteria by other completely unrelated food scares, such as, most importantly, "mad-cow disease" (BSE or bovine spongiform encephalopathy). In this climate of fear, in June 1999 the EU agreed to a de facto moratorium on approving new biotech crops and also passed laws requiring labeling of foods derived through biotechnology. In early March 2000, the EU decided to postpone decisions on three new bioengineered crops for another six months.¹²

Anti-biotechnology spokespersons and activists in Europe and elsewhere have a wide range of viewpoints concerning this technology. There are those, as Britain's Prince Charles, who view it as "immoral" that scientists are playing God—people should eat organic food instead. Some activists raise the spectre of "super weeds" or unknown toxic substances being released into the environment, while others talk of transnational corporations producing, patenting, and marketing transgenic seeds and eventually taking over world agriculture.

Highly disputed and extremely limited research on the effect of Bt corn pollen on Monarch butterflies and alleged toxic effects of Bt potatoes has been sensationalized in the media and by activists.¹³

A letter to the editor of *Nature* magazine described a small laboratory study by Cornell University researchers who found that, when Monarch butterfly larvae were fed pollen from Bt corn, many of

¹¹Abi Berger, *Hot Potato*, BRITISH MEDICAL JOURNAL (Feb. 27, 1999, 318:611).

¹²Reuter's, Brussels, Belgium, Mar. 9, 2000.

¹³*Bacillus thuringiensis* (Bt) is a soil bacterium that kills some insect predators. "Bt corn" is corn to which a gene for this bacterium has been added. (See "Terminology," at page 3, *supra*.)

the larvae died.¹⁴ Despite the authors' statement that firm conclusions could not be drawn from their initial laboratory study of 25 caterpillars, headlines screamed that bioengineered corn was killing Monarch butterflies. According to scientists who commented on the research, field studies of Bt corn do not show those problems for several reasons: Bt pollen is not dispersed widely and the Monarch larvae would probably not encounter the high concentrations used in the lab. If problems were to occur in the field, then wider buffer zones could be planted around the corn fields.¹⁵

An earlier study in Scotland in 1998 by Arpad Pusztai raised a bigger ruckus. Pusztai claimed his research showed that genetically modified potatoes were toxic and harmful to rats. Activist groups, such as Friends of the Earth and Greenpeace, held press conferences to call a halt to bioengineered foods. Newspapers across the UK and elsewhere carried articles on "Frankenfood." Yet, toxicologists and other scientists who took a close look at the data found that genetic modification didn't seem to be the culprit. It appeared that the rats likely suffered from starvation or from the force-feeding of known toxins in potatoes.¹⁶

These were only two of the highly publicized "studies" used by anti-biotechnology activists to call for restrictions on this "dangerous" new technology.

THE PLAYERS AND THEIR POSITIONS DURING PROTOCOL NEGOTIATIONS

Against this background of near hysteria in Europe, negotiations on a Protocol on Biosafety took place.

The negotiations, which began in 1995 in Jakarta, have been contentious since the beginning. At the February 1999 meeting in

¹⁴John E. Losey, et al, *Transgenic pollen harms monarch larvae*, NATURE, Vol. 399 (May 20, 1999), p. 214.

¹⁵United States Information Agency website, <www.usia.gov/topical/global/biotech/99101300>.

¹⁶NEW SCIENTIST website <www.newscientist.com/nsplus/insight/gmworld/gmfood/unpalatable.html>.

Cartagena, Colombia, the negotiations broke down, mainly because of deep splits between the EU and the U.S. on major issues. This led to the scheduling of three sets of informal meetings followed by the Montreal session as the parties tried to resolve three hotly debated key issues: the scope of an agreement, its relationship to other international agreements, and the use of the precautionary principle.

The major players in the negotiations included five blocs of countries representing different negotiation positions on these and other issues:

Miami Group

This bloc included the major agricultural exporting countries, Australia, Argentina, Canada, Chile, Uruguay, and the U.S., which have a particularly high stake in the free flow of agricultural commodities. Although the U.S., since it did not ratify the Convention, did not have a vote, it could make its positions felt through other parties in the Miami Group. The group's positions included limiting the scope of the Protocol by excluding commodities from the Cartagena Protocol's stringent requirements for LMOs intended to be released into the environment. One of the Miami Group's goals was to allow commodities intended for food, feed, and processing to operate under a simplified procedure, so that they would be subject to expedited import approvals. They also wanted LMOs in transit and those destined for contained use to be excluded from the scope of the agreement, since those products do not have an adverse effect on the environment. The exclusion of human pharmaceuticals produced through biotechnology was also an issue.

Another critical issue for the Miami group was the preservation of countries' rights and obligations under other international agreements, especially the World Trade Organization's (WTO) agreements, already signed by most parties to the Protocol negotiations. As major agricultural exporters, Miami Group countries fought for a "savings clause" in the pact to clarify that the Protocol would not take precedence over other existing trade agreements. (In international agreements, a "savings clause" is an explicit statement that the rights

and obligations of countries under existing international agreements are protected.)

Major agricultural exporting countries and agribusinesses also wanted regulatory certainty and predictability in an agreement relating to procedures for trade in bioengineered commodities, such as corn, cotton, and soybeans. Such crops are harvested and co-mingled with conventionally produced commodities and are transported in bulk through a highly efficient global commodities system. Exporters were concerned that without a consistent policy, various countries could set up varying procedures that could involve separating and segregating genetically modified crops, which would significantly impede the flow of these products and raise their costs.

European Union

The EU bloc took many positions in opposition to the Miami Group. It was no surprise, given the strong anti-biotechnology campaigns waged in the EU, that this bloc supported a much more restrictive Protocol. Still in the throes of U.K.-led hysteria about bioengineered food, EU policy makers have reacted by restricting this technology, and would like to see the same approaches adopted on the international level.

In addition, EU countries, with their heavily subsidized farming, view foreign agribusinesses as a competitive threat. With heavy subsidies and price supports, EU farmers see no need to improve productivity. Currently, the EU's Common Agricultural Policy comprises fully half of the total budget of the European Union. It is estimated that in the EU about 20 percent of the farmers—generally the largest—receive 80 percent of this amount; in other words, 40 percent of the *entire EU budget* goes to 20 percent of the farmers in those countries.¹⁷

Under the Uruguay Round of trade talks, significant agricultural tariffs are to be phased out. Over the longer term, countries' internal

¹⁷Linda Whetstone, *The Perversity of Agricultural Subsidies*, FEARING FOOD: RISK, HEALTH AND ENVIRONMENT, (Roger Bate and Julian Morris, eds.) (Oxford: Butterworth-Heinemann, 1999), p. 133.

price supports and subsidies are also targeted. A great risk exists that as the more visible protectionist policies give way, the developed world may turn to the less-visible, non-tariff trade barriers—disguising their protectionist policies behind health or safety standards not based on science. Some of those concerns have already arisen, most visibly in U.S. trade disputes with the EU. For example, the EU refuses to allow importation of hormone-treated beef, even though scientific evidence does not support concerns about its

Thus, in the Protocol negotiations, the EU bloc supported a stringent Protocol based on the precautionary principle, whose scope would cover commodities. The EU also supported the position that the Protocol should take precedence over international trade agreements.

Like-Minded Group

This bloc, which included most of the developing countries, took positions almost diametrically opposed to the Miami Group. It promoted the broadest possible scope for the Protocol, earlier pushing for the coverage of products produced through biotechnology but containing no living organisms. The group also strongly supported the use of the precautionary principle and wanted the Protocol to “trump” other international agreements.

Concerned about their countries’ lack of resources and infrastructure to protect their genetic resources, this bloc was the primary advocate of “capacity building” requirements that would require either developed country governments or the biotechnology industry to pay for training bureaucrats and building a regulatory apparatus. Led by Ethiopian environmental official Tewolde Berhan Gebre Egziabher,

a vehement opponent of biotechnology,¹⁸ the Like-Minded Group pushed for the most stringent procedures.

Conflict Within the Like-Minded Group

It may seem puzzling that negotiators for developing countries, which have most to gain from agricultural biotechnology in the future, were the most opposed to this technology in the negotiations. These nations may suffer from what economists call the “principal/agent” problem in their anti-biotechnology positions in Montreal. Many of their representatives at Montreal were government employees, in most cases connected to environmental offices. As such, their interests may have focused more on furthering their departmental interests, not necessarily the broader interests of their governments as a whole or of the citizens of their countries. Also, because of the monies that are expected to be spent on “capacity building” to help developing countries better deal with risk assessment and regulation of biotechnology, there may have been a certain amount of rent-seeking on the part of representatives, who see a possibility of greater resources targeted to their agencies.

The representatives at Montreal from developing countries also appeared to take a different position toward trade from that of trade representatives from developing countries at the WTO meeting in Seattle in late November 1999. In Seattle, many developing countries recognized that non-tariff trade barriers under the guise of safety considerations disrupt open trade, and they were concerned that some of the developed countries did not seem amenable to focusing on those issues.

Compromise Group

¹⁸Dr. Egziabher’s writings appear on anti-biotechnology activist groups’ web-sites, e.g., Third World Network Web site, <www.twinside.org.sg/title/abdicate-cn.htm>. The following is an illustrative quote from Dr. Egziabher’s article on biosafety on that site:

“The USA delegation kept insisting that all genetic engineering did was mix genes from different individuals, which is what sexual reproduction does, and which is thus as old and as well tried as life itself. This is the basic thinking behind ‘substantial equivalence’: when my wife’s genes and my genes mix to give us a child, that is considered the same as when the scientist, at the same time, introduces the gene for snake venom into the egg that will become our child. Our venomous child would then be considered substantially equivalent to my wife and me. Suppose the child bites my wife while suckling?”

Switzerland, Japan, Norway, and Mexico formed a loose coalition of nations that took the “middle-ground” during the earlier negotiations. Their position on the various contentious issues was in flux, with their members primarily wanting the completion of the negotiations and a final agreement.

Central and Eastern Europe

This group included Eastern and Central European countries that are not members of the European Union and, later, the Russian Federation, which had formed an independent group during earlier rounds of negotiations. Like the Compromise Group, this bloc was interested primarily in reaching some resolution, and its positions were flexible, though tending toward those held by the EU. Many countries in this group hope to become members of the EU and were therefore very accommodating to the EU in the negotiations.

The Maestro

The Montreal meeting had a very able maestro orchestrating the final negotiations. Chairman of the negotiating session, Juan Mayr, Environment Minister of Colombia, was determined to have the parties reach agreement and used small group sessions as well as humorous ice-breaker gimmicks to keep negotiators mellow. Mayr was credited with keeping the negotiations from breaking down and with moving the Miami Group and the EU toward a compromise.

Anti-biotechnology protesters were a minor factor in Montreal. Confrontational politics as practiced by protesters against the World Trade Organization in Seattle was absent in Montreal for several reasons. Protesters in Montreal, such as Greenpeace, were supporters of the Cartagena Protocol—they wanted stringent restrictions on the transport and use of crops produced by means of biotechnology. They were thus not interested in stopping the talks and pushed for an agreement. Anti-biotechnology activists also had strong proponents of their views among members of the delegations of both the EU and the Like-Minded Groups.

The Precautionary Principle

The precautionary principle is increasingly invoked as an approach that governments should embrace to deal with risks, especially environmental risks, arising from new technology or new products. First recognized in the World Charter for Nature, which was adopted by the United Nations General Assembly in 1982, the principle was subsequently included in other international agreements, most notably in the Rio Declaration during the UN Conference on Environment and Development in 1992. The Rio Declaration states this approach in its Principle 15:

In order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.¹⁹

Essentially, this approach embodies a concept that, at first glance, sounds sensible: Shouldn't governments take action to protect human health and the environment even when there is no conclusive evidence of harm?

However, some governments, such as the European Commission (EC), have taken this principle further in some instances and have insisted that, when scientific evidence "is not black and white, policy should err on the side of caution so that there is zero risk to the consumer."²⁰ They want to err on the side of caution not only when the evidence is not conclusive, but when no evidence exists that would indicate that harm is possible.

¹⁹UN CONFERENCE ON ENVIRONMENT AND DEVELOPMENT, RIO DECLARATION ON ENVIRONMENT AND DEVELOPMENT, 1992.

²⁰Report, European Commission's Scientific Committee on Veterinary Measures Relating to Public Health, Brussels, Apr. 1999.

Although the EC in a more recent communication on the precautionary principle has backed away from that zero-risk endorsement,²¹ implementation of the principle readily leads to an approach that attempts the impossible task of eliminating risk. Furthermore, the precautionary principle can never be satisfied as long as an inventive alarmist can think of yet one more hypothesis about a possible risk that has not yet been absolutely proven not to exist.

The precautionary principle as used in the Protocol states that even when there is a lack of scientific evidence that products produced through biotechnology are likely to cause harm, a country can take action to ban the import of those products. The Protocol invokes the precautionary principle in its Preamble and several other specific references and thus enshrines it as a key principle in the agreement, as indicated below:

Preamble: “Reaffirming the precautionary approach contained in Principle 15 of the Rio Declaration on Environment and Development, . . .”

Article 1: OBJECTIVE: “In accordance with the precautionary approach contained in Principle 15 of the Rio Declaration on Environment and Development, . . .”

Article 10 (6), DECISION PROCEDURE and Article 11 (8), PROCEDURE FOR LIVING MODIFIED ORGANISMS INTENDED FOR DIRECT USE AS FOOD OR FEED, OR FOR PROCESSING: “Lack of scientific certainty due to insufficient relevant scientific information and knowledge regarding the extent of the potential adverse effects of a living modified organism on the conservation and sustainable use of biological diversity in the Party of import, taking also into account risks to human health, shall not prevent that Party from taking a decision, as appropriate, with regard to the import of

²¹COMMISSION OF THE EUROPEAN COMMUNITIES, COMMUNICATION FROM THE COMMISSION ON THE PRECAUTIONARY PRINCIPLE (Brussels: Feb. 2, 2000). <europa.eu.int/comm/off/com/health_consumer/precaution_en.pdf>.

living modified organism in question as referred to in paragraph 3 above, in order to avoid or minimize such potential adverse effects.”

RISK ASSESSMENT UNDER ARTICLE 15

General Principles: “4. Lack of scientific knowledge or scientific consensus should not necessarily be interpreted as indicating a particular level of risk, an absence of risk, or an acceptable risk.”

This explicit and repeated reference to the precautionary principle in the Protocol did not go unnoticed. Less than a week after it had been agreed to, the EC communication on the precautionary principle noted that the Protocol “confirmed the key function of the Precautionary Principle.” and that the principle “has been progressively consolidated in international law, and . . . become a full-fledged and general principle of international law.”²² That same day—February 2, 2000—Greenpeace International’s web site noted: “The battle was won for the precautionary principle to be the basis for decision-making on transboundary movements of all living modified organisms, including for commodities.”²³

No action or activity is risk-free. As is true of any new technology, biotechnology creates some new risks while reducing older risks. Both must be considered and evaluated—the risks of change must be balanced against the risks of stagnation. New technologies have tended to reduce overall risk, and that fact is ignored in the precautionary principle and its use in the Cartagena Protocol.

The precautionary principle as used in the Protocol has the most serious implications for people in poorer, developing countries. That is where potential benefits of new technologies, such as biotechnology, can be halted before they have begun to be felt.

The human and environmental benefits of agricultural biotechnology could be dramatic and widespread. Higher crop yields per acre

²²*Id.* at 11.

²³*See* “Greenpeace International: Summary of the Cartagena Protocol on Biosafety,” 2 Feb. 2000 <www.greenpeace.org>.

not only can provide larger food output to feed the world's hungry, but also reduce the amount of land required for farming, which helps preserve forests and habitats. Reductions in the use of pesticides made possible by bioengineering resistance into plants can enhance the environment. The ability to grow crops in previously barren areas can help keep pace with the needs of growing populations, especially in developing countries. Enhanced nutritional levels of staple crops, such as rice, can prevent diseases that are life-threatening or debilitating. Possible reduction of allergens in certain foods can lower health risks for many people. Longer shelf-life of fresh foods can reduce costs and improve availability.

Some projects are still in the research stage; others are further along in the laboratory or field-testing. Promising work on food products produced through biotechnology includes:

- Development of rice containing beta-carotene—a preliminary substance for the production of Vitamin A—and enhanced iron levels. This product could alleviate Vitamin A deficiency, which affects 400 million people worldwide and can lead to blindness and weakened immune systems.²⁴
- Researchers are working on potatoes with vaccines against E. Coli. Others are seeking to deliver vaccines through fresh fruit, such as bananas.²⁵
- Research is developing disease-resistant banana varieties, a task difficult to accomplish through conventional breeding methods.²⁶
- Scientists have created disease-resistant cassava plants, which could increase their yield ten-fold. Cassava is a staple in the diets of many people in developing countries.²⁷

²⁴New Genes Boost Rice Nutrients," SCIENCE, Aug. 13, 1999, Vol. 285, pp. 999-05 <www.sciencemag.org>.

²⁵Cynthia Washam, *Biotechnology Creating Edible Vaccines*, ANNALS OF INTERNAL MEDICINE, Sept. 15, 1997 <www.acponline.org/journals/annals/15sep97/curredeb.htm>.

²⁶*Crop Engineering Goes South*, SCIENCE, July 16, 1999, Vol. 285, p. 371.

²⁷*Id.*

These and other potential crops might raise safety issues related to specific foods and production methods, and those risks should be carefully examined. However, the fact that biotechnology is the process used to create them does not in itself raise any safety issues. The rote application of the precautionary principle, with its strong bias against innovation, to broad classes of biotech products creates high risks that extraordinarily useful products will be suppressed in exchange for no gain in safety.

The Scope and Coverage of the Protocol

The Protocol deals with several classes of “living modified organisms,” that is, animals, plants, seeds, crops, and raw foods that have been produced through bio-engineering. Human pharmaceutical products produced through biotechnology are excluded from this agreement if they are “addressed” by other international agreements or bodies, although their inclusion was considered in earlier negotiations.

For the agricultural and other products within its domain, the Protocol divides LMOs into three classes: (1) those intended for release into the environment; (2) those for food, feed, and processing; and (3) those in transit and for contained use.

For biotechnology products intended to be introduced into the environment, such as seeds, plants, and live fish, stringent requirements are imposed on both the exporter and the importing country. An Advance Informed Agreement (AIA) procedure requires advance notice by the exporter to the importing country before the first shipment into the country. The required paperwork includes detailed descriptions of the product’s origin, biotechnological techniques used in its production, its characteristics, intended uses, risk assessment reports, and methods for safe handling, storage, transport and use. The regulatory status within the exporting country must also be explained.

After receiving this information, the importing country must officially authorize the shipment and must take measures to evaluate and control risks.

Bulk shipments of LMOs intended for use as food or feed, or for processing are not subject to the extensive AIA procedure. However,

the producing nation must inform the parties of the existence of the product by notifying the Biosafety Clearing House, and provide a risk assessment of the product, prepared in accord with an annex to the Protocol.

The Protocol says that “a party may take a decision on the import of living modified organisms intended for direct use as food or feed, or for processing, under its domestic regulatory framework that is consistent with the objective of this Protocol.” So a party could, apparently, ban imports of GM products if it bans their domestic production as well. Furthermore, the Protocol specifically says that “lack of scientific certainty due to insufficient relevant scientific information” shall not prevent a party from banning imports. Parties must communicate decisions whether they want to import agricultural commodities containing specific varieties of LMOs to the Biosafety Clearing House on the Internet.

Transborder shipments of such products must be labeled, “may contain LMOs,” and must note that they are not intended for introduction into the environment.

The Protocol also says that the parties will within two years revisit the issues of further documentation for and possible segregation of genetically modified products.

The provisions of the Protocol concerning the advance informed agreement procedure do not apply to LMOs that are in transit through a nation or that are destined for contained use within the importing nation. (“Contained use” involves any operation controlled by specific provisions that limit the contact of the LMOs with the external environment.) The importing nation may regulate transportation and contained use according to its own standards.

The major agricultural exporting countries claimed that these requirements represented a victory because their basic food commodities are not subject to extensive and lengthy advance notification and approval procedures even if produced through biotechnology.

However, the victory may be hollow, because the agreement sets a precedent for genetically modified crops to be treated differently from hybridized crops, even when there is no scientific evidence that they represent a threat to anything. As such, these crops are being judged on the basis of the process used to produce them rather on the

level of risk represented by the product itself. Inherent in this approach is the assumption—totally unwarranted by the science—that plants produced by biotech carry some intrinsic risk not present in hybrids produced by conventional means.

The Protocol also sets up substantial roadblocks to the export of another important product of modern agricultural science, genetically modified seeds for planting. These roadblocks will limit the use of such seeds in many developing countries because the costs associated with the AIA may prevent poorer countries from using seeds that would produce higher-yielding, pest-resistant, or enhanced-nutrient food. With increased transaction costs and built-in delays for trade in seeds and plants, exporters will have strong incentives to focus on high-value crops and large-scale importers and to ignore the smaller and less valuable third world markets.

There is an escape hatch in the Protocol, though. A product can be exempted from the AIA procedures if a decision of the Conference of the Parties to the Protocol identifies it as “not likely to have adverse effects.”

Relationship of the Protocol to Other International Agreements

The preamble to the Protocol deals with the thorny issue of the agreement’s relationship to other international agreements. This issue was particularly contentious in the negotiations, as some countries wanted the Protocol and its precautionary approach to trump other agreements and the decisions of other international bodies when a “threat” to biodiversity is perceived.

In particular, the Protocol’s relationship to the World Trade Organization was an issue. The WTO requires that decisions about environmental risks be based on respectable science, not on the hunches and inventions that may suffice under the precautionary principle. The WTO Agreement on the Application of Sanitary and Phytosanitary Measures (SPS) and the Agreement on Technical Barriers to Trade (TBT) recognize standards set by the Codex Alimentarius Commission as standards based on scientific evidence and therefore regard them as appropriate recommendations against which countries’ trade restrictions can be measured. The Codex, an

agency of the United Nations Food and Agricultural Organization and the World Health Organization, sets international standards and guidelines for food safety and hygiene to protect human health and to facilitate fair trade.

The Miami Group feared that safety issues, without scientific evidence of risk, could be raised under the Protocol, especially by the EU, simply to block trade or slow innovation. The economic interest of the EU members in protecting their highly subsidized, costly and inefficient agricultural markets through non-tariff trade barriers was a particular concern. Using the pretext that an agricultural product poses a “threat to biodiversity,” a country could insulate its own producers from competition.

The major exporting countries strongly supported the need for a “savings clause” to clearly preserve parties’ rights and obligations under other international agreements, especially those relating to trade.

The final text of the Protocol includes three “preambular clauses” dealing with its relationship to other international agreements:

“Recognizing that trade and environment agreements should be mutually supportive with a view to achieving sustainable development,

“Emphasizing that this Protocol shall not be interpreted as implying a change in the rights and obligations of a Party under any existing international agreements,

“Understanding that the above recital is not intended to subordinate this Protocol to other international agreements”

With the exception of those clauses appearing in the Preamble, the remainder of the agreement is silent on those relationships.

During the negotiations, there was an attempt to include a “savings clause” in the main text of the agreement, but because some countries would not agree to do so, the reference was included in the preamble instead. Because the clause is not specifically included in the provisions, however, it could be argued that its placement in the preamble relegates it to a weaker position in legal disputes.

The language in the clauses, while somewhat vague, seems to favor the Protocol over trade agreements, contrary to the desires of the Miami bloc. The first clause has both trade and environment agreements mutually supporting each other “with a view to achieving sustainable development.” If both types of environmental and trade goals were to be judged as having equal weight, then a phrase such as “and facilitating trade” should logically be included. Its absence would seem to point to the precedence of the biodiversity goal over the trade goal. Also, “sustainable development” is another term of art in the enviro world, and its meaning, while uncertain, is not favorable to trade and economic growth.

The second clause may be even more problematic. It notes that *existing* international agreements are not changed as a result of the Protocol. However, that leaves the door open for rights and obligations in *future* agreements to be guided by the Protocol. With the emphasis in the third clause that the Protocol is not to be subordinate to other international agreements, it would seem that the three statements taken as a whole are open to the inference that the Cartagena Protocol should take precedence in the future.

It also can be argued that the Protocol, with the enshrinement of the precautionary principle, allows countries to restrict imports even when no scientific evidence shows that they harm biodiversity or human health. That, on its face, seems to allow the precautionary principle to be used as a valid criterion to block trade in bioengineered materials, in conflict with the need contained in the WTO agreements for decisions to be based on scientific principles and evidence.

The answer to the question of whether trade in genetically-engineered plants will be governed by the risk-based rules of the World Trade Organization (WTO) and other multilateral treaties that require sound science is not clear.

Besides the ambiguities about how trade disputes would be resolved when the Protocol butts up against the WTO agreements, there is no guarantee that the WTO and Codex policies relating to the use of scientific principles in resolving trade disputes relating to food safety and human health will remain sacrosanct. The WTO, partly because of its enhanced role in dispute settlement as compared with the General Agreement on Tariffs and Trade (GATT), has increased

attention focused on its activities, with some vocal critics calling for linkages of trade with other issues, including environmental and human rights issues. Codex, partly because of its own enhanced role in the WTO, is also facing greater pressure to move away from standard-setting based on scientific principles toward a precautionary approach.

Much of the pressure on Codex is coming from the EU, which is using a recent European Commission document—the *Communication on the Precautionary Principle*²⁸—to promote its views in various Codex meetings.

The *Communication*, released a few days after agreement on the Protocol was reached, referenced that document as an important part of the legal framework on which the precautionary principle rests. The speed with which the Protocol was incorporated into the EC document—three days—is in itself unusual. The many layers of approvals that a multi-country document requires are not usually accomplished with such alacrity. If the EC, however, was counting on the Protocol to build its case for the validity of the precautionary principle in international agreements, it was critical to incorporate that latest agreement.

Indeed, the EC document includes an annex illustrating how the precautionary principle has been used in international law.²⁹ It includes a discussion of the WTO SPS Agreement and how the WTO’s Appellate Body has interpreted those standards in trade disputes so that the precautionary principle is “reflected.”

The EC document noted that the WTO Agreement itself in its preamble “highlights the ever closer links between international trade and environmental protection.”³⁰ As a result, the EC document argues, there has to be a consistent approach so that the precautionary principle, as a general principle, has to be taken into account in the WTO SPS and TBT agreements. The *Communication* also states that,

²⁸COMMISSION OF THE EUROPEAN COMMUNITIES, COMMUNICATION FROM THE COMMISSION ON THE PRECAUTIONARY PRINCIPLE (Brussels: Feb. 2, 2000) <europa.eu.int/comm/off/com/health_consumer/precaution_en.pdf>.

²⁹*Id.*, Annex II, pp. 26-28.

³⁰*Id.* at 27.

while not using the term “precautionary principle,” the SPS agreement does include Article 5.7, which “clearly sanctions the use of the precautionary principle.”³¹ That article states:

“In cases where relevant scientific evidence is insufficient, a Member may provisionally adopt sanitary or phytosanitary measures on the basis of available pertinent information, including that from the relevant international organizations as well as from sanitary or phytosanitary measures applied by other Members. In such circumstances, Members shall seek to obtain the additional information necessary for a more objective assessment of risk and review the sanitary or phytosanitary measure accordingly within a reasonable period of time.”³²

The EC document, however, ignores the fact that the SPS article isn’t open-ended in allowing countries to take measures to refuse imports based on hypothetical risks. The SPS paragraph also grounds those measures on the basis of “pertinent information,” and references information from “relevant international organizations,” such as the Codex, and other Members’ measures. In addition, the exception the EC noted in Article 5.7 is a provisional exception for insufficient scientific evidence, not an exemption from “scientific principles.” As set forth elsewhere in the SPS document, while countries have the right to apply their own measures to protect human, animal or plant life or health, those measures, according to the SPS Agreement’s Article 2, “Basic Rights and Obligations,” are circumscribed. In particular, the measure can be “applied only to the extent necessary to protect human, animal or plant life or health,” and has to be “based on scientific principles.”³³

³¹*Id.* at 11.

³²Agreement on the Application of Sanitary and Phytosanitary Measures, Article 5.7.

³³*Id.*, Article 2.2:

“Members shall ensure that any sanitary or phytosanitary measure is applied only to the extent necessary to protect human, animal or plant life or health, is based on scientific principles and is not maintained without sufficient scientific evidence, except as provided for in paragraph 7 of

Besides the EC's reinterpretation of those WTO agreements under the precautionary principle umbrella, the scientific principles of the Codex Alimentarius Commission are under heavy pressure to give way to the precautionary principle. The agenda for a Codex meeting of the Committee on General Principles (Paris, April 10-14, 2000) includes discussions of whether and how the concept of "precaution" or a "precautionary principle" or a "precautionary approach" should be incorporated into sections of the texts dealing with risk analysis.³⁴ The EC document is being circulated to support the incorporation.

It appears that the building blocks are being placed to make the precautionary principle into a keystone of international agreements. The vice president of the Washington-based Council for Responsible Nutrition, John Hathcock, in a recent speech,³⁵ showed how this aim can readily be accomplished in a 4-step process that is already underway:

- "1. Use 'savings clause' to get support for Biosafety Protocol
- "2. Use Biosafety Protocol to justify EU Communication on Precautionary Principle
- "3. Use Biosafety Protocol agreement and EU document to justify Precautionary Principle at Codex and WTO
- "4. Use Codex or WTO sanction of Precautionary Principle to block undesired products, thus overruling 'savings clause'."

The importance of the Protocol's emphasis on the precautionary principle was hailed by anti-biotechnology activists, such as Greenpeace's Charles Margulis, who stated, "Countries will have the right—without needing complete scientific evidence—to ban the import [of

Article 5."

³⁴Codex Alimentarius Commission, Codex Committee on General Principles, Agenda Item 3, CX/GP 00/3.

³⁵At a symposium on Codex Alimentarius, "Critical Issues Affecting Food Safety and Trade," sponsored by the Food Industry Codex Coalition, Mar. 10, 2000, Washington, D.C.

GM food].”³⁶ The movement away from science-based decisions, as exemplified in the Cartagena Protocol, is not occurring in a vacuum.

OTHER ISSUES IN THE PROTOCOL

Biosafety Clearing-House

The Protocol established a Biosafety Clearing-House to exchange information and experiences relating to the importing of LMOs and to aid Parties in implementing the Protocol, particularly developing countries. It will serve as the means through which information from exporters and importers relating to the Protocol’s requirements for notification, identification, risk assessment, and other information is made available through the Internet.

Risks to Human Health

Besides addressing the issue of threats to biodiversity that may be posed by “living modified organisms,” the Protocol uses the precautionary approach to address issues of human health in several of its provisions. By including human health, the Protocol has thus greatly expanded its objective and scope. Biodiversity of plants, animals, and ecosystems is no longer the primary focus, even though numerous other international agreements cover human health issues.

Socio-Economic Considerations

Under Article 26, far removed from the basic provisions governing the import of LMOs, the Protocol adds a joker to the deck. Countries can decide to ban imports of products produced through biotechnology based on “socio-economic” considerations, again a significant departure from the use of scientific assessments. Intended to help developing countries cope with societal changes that may occur with the introduction of biotechnology, the provision could be used for

³⁶Amanda Ripley, “Baby Steps,” Law News Network, March 13, 2000 <www.lawnewsnetwork.com>.

protectionist purposes. Although the Protocol does note that socio-economic considerations are to be consistent with other international agreements, the provision would seem to open the door to vague and nebulous claims. Besides the vagueness of the term, there is also ambiguity about whether socio-economic considerations can enter into the decisions to ban imports even when there is no threat to biodiversity. Combined with the human health considerations, it is conceivable that a country could ban imports of seeds derived from biotechnology when even one highly vocal anti-technology group raises fears (a “social” consideration) or because fewer farmers might be needed (an “economic” consideration).

Confidential and Non-Confidential Information

The Protocol notes that some information provided by the exporter to the importing country may be treated as confidential. Other types of information, such as the general description of the LMOs, the notifier’s name and address, a summary of the risk assessment, and plans for emergency response “may not” be considered confidential. Disclosing plans for emergency response could create problems seen in other areas relating to release of potentially harmful substances and emergency responses—“worst case” scenarios. Concerns have been expressed by security forces and the public about the use of such information by terrorist organizations to bring about these worst case scenarios.

Review of Decisions

An importing country can review and change its decision about the transboundary movement of an LMO, provided the decision is based on new scientific information, including risks to human health. However, the Protocol does not lay out criteria to ensure that countries do not abuse this right. Notification to the exporter and the Biosafety Clearing-House is required during a set time period, and the importing country must cite reasons for reversing its decision.

Other Agreements Between and Among Countries Relating to Living Modified Organisms

According to the Protocol, Parties may enter into multilateral, bilateral and regional agreements relating to the transboundary movements of LMOs, provided those agreements do not result in a lower level of protection than provided for in the Protocol.

Liability and Redress

No final language was included setting forth international liability rules and procedures for damage resulting from transboundary movements of LMOs. Within four years the Conference of the Parties will review international law relating to this issue.

THE PROTOCOL—UNDERMINING THE GOALS OF
THE CONVENTION ON BIOLOGICAL DIVERSITY

The text of the 1992 Convention on Biological Diversity, the umbrella agreement of which the Protocol is a subagreement, recognizes clearly that, while the new biotechnology might be used to create products that present risks, it may also produce products providing great benefits for the goals of conservation and biological diversity. The Convention strongly endorses the need for encouraging rather than stifling biotechnology, even while recognizing the legitimacy of a Protocol establishing mechanisms for controlling any possible risks.

By contrast, the text of the Cartagena Protocol includes only one reference in the preamble to biotechnology's "great potential for human well-being if developed and used with adequate safety measures for the environment and human health . . ." There is no mention of biotechnology's potential contribution to biodiversity.

The Protocol, with its single focus on the hypothetical rather than scientifically demonstrated risks of biotechnology, seems to be at odds with the enabling agreement under which it operates. The Convention affirms biotechnology's essential role in attaining the goals of biodiversity. By contrast, the Protocol sets up obstacles to the use of biotechnology products to help achieve those goals. The Protocol encompasses even those agricultural products produced through biotechnology that present no risk to biodiversity and sets up obstacles

to the use of this technology in promoting the goals of conserving biological diversity. For example, the stringent and lengthy procedures for notification and approval of seeds produced through biotechnology could mean that crops that would use less land or require fewer pesticides could be held up. In particular, producers, because of the cumbersome process, may decide not to bother marketing such seeds to poorer countries.

Throughout the text of the Convention it is clear that biotechnology was seen to have an integral role to play in advancing its goals. The section on “Use of Terms,” which indicates the precise meaning of words and phrases as used in the document, defines “biotechnology” in a straightforward manner,³⁷ and includes a special note that use of the term “technology” throughout the text includes biotechnology. That inclusion is critical in determining that biotechnology in the Convention was to be thought of as an essential tool to use, not just a tool to fear. The following quotes from the Convention indicate that clearly:³⁸

“Aware that conservation and sustainable use of biological diversity is of critical importance for meeting the food, health and other needs of the growing world population, for which purpose access to and sharing of both genetic resources and *technologies* are essential,” (Preamble, p.3) (emphasis added)

“The objectives of this Convention, to be pursued in accordance with its relevant provision, are the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising out of the utilization of genetic resources, including by appropriate access to genetic resources and by appropriate transfer of relevant *technologies*,

³⁷“‘Biotechnology’ means any technological application that uses biological systems, living organisms, or derivatives thereof, to make or modify products or processes for specific use,” Convention on Biological Diversity, Text and Annexes (Montreal, Quebec: Secretariat of the Convention on Biological Diversity, Apr. 1998), p. 4.

³⁸Convention on Biological Diversity <www.biodiv.org/chm/conv/default.htm>.

and by appropriate funding.” (Article 1, Objectives, p. 4) (emphasis added)

“(c) In keeping with the provisions of Articles 16,18 and 20, promote and cooperate in the use of scientific advances in biological diversity research in developing methods for conservation and sustainable use of biological resources.” (Article 12, Research and Training, p. 11)

Indeed, the Convention portrays biotechnology as an “essential” element to achieve the Convention’s objectives and notes the importance of countries’ having access to this technology:

“1. Each Contracting Party, recognizing that technology includes biotechnology, and that both access to and transfer of technology among Contracting Parties are essential elements for the attainment of the objectives of this Convention, undertakes subject to the provision of this Article to provide and/or facilitate access for and transfer to other Contracting Parties of technologies that are relevant to the conservation and sustainable use of biological diversity or make use of genetic resources and do not cause significant damage to the environments.” (Article 16, Access and Transfer of Technology, p. 14)

Cooperative research and development programs for technology that would aid biodiversity are to be encouraged and promoted:

“4. The Contracting Parties shall, in accordance with national legislation and policies, encourage and develop methods of cooperation for the development and use of technologies, including indigenous and traditional technologies, in pursuance of the objectives of this Convention. . . .” (Article 18, Technical and Scientific Cooperation, p. 15)

“5. The Contracting Parties shall, subject to mutual agreement, promote the establishment of joint research programmes and

joint ventures for the development of technologies relevant to the objectives of this Convention.” (Ibid.)

This apparent conflict between the stated goals of the Convention and the stringent restrictions on biotechnology in the Protocol was not an issue in the negotiations. However, it is clear that in the space of only eight years from the signing of the Convention to the signing of the Cartagena Protocol, there has been a significant shift from *a positive affirmation* of biotechnology’s role in the goals of biodiversity to *a complete disregard* for its role in meeting the Convention’s objectives.

The goals of the Convention—conservation and sustainable use to protect biodiversity—would obviously be well-served through this technology. Some current and potential applications of agricultural biotechnology that would help conserve natural resources and promote biodiversity are noted below:³⁹

- Higher yields per acre for many crops produced through biotechnology mean that farmers would not require as much land to produce crops, thus helping to preserve forests and animal and plant habitats.
- Use of genetically modified plants with built-in resistance to insects and diseases would mean that substantially fewer pesticides, insecticides, and herbicides would be required, thus reducing farmers’ exposure and residues in the soil, groundwater, and air.
- Biotechnology can expand the genetic variation of many staple crops and expand the gene pool.
- Biotechnology can aid in preserving endangered species through genetic enhancement of traits needed for survival.

There is irony in the Protocol’s perspective, as a great potential boon to biodiversity ends up characterized solely as a threat. The European Commission and anti-technology activists understood what

³⁹Biotechnology Helps Save the Environment, MANILA TIMES, Mar. 21, 2000 <www.manilatimes.net/2000/mar/21/opinion/20000321opi9.html>.

was accomplished through this creative draftsmanship. Not only is a new technology branded as presenting only risks, contrary to the enabling Convention on Biological Diversity, but another setback for the cause of sensible science has been achieved.

CONCLUSION: RICH COUNTRIES' FOOD SAFETY ACTIONS
CAN HARM POOR COUNTRIES

The Cartagena Protocol on Biosafety, by singling out biotechnology as a threat to biodiversity and imposing rigid procedures on trade in bioengineered products, will set back rather than advance the conservation and sustainable use of biological resources. The implications arising from the Protocol could be serious. The Protocol will affect not only trade in these products but also the development of new crops that could have significant benefits for people and the environment in both the developed and the developing world—higher yields per acre, less intensive use of land, reductions in pesticide use, for example. In poorer countries especially, agricultural biotechnology holds potential for improving food security and combating debilitating diseases, such as Vitamin A deficiency and anemia.⁴⁰

The precautionary principle, as embodied in the Cartagena Protocol, focuses on the spectre of human and environmental risks arising from biotechnology. However, such a skewed approach to risk can, paradoxically, increase risks both to human health and the environment. There is a risk from innovation, but there is also risk from stagnation. Any policy relating to new technology needs to use a risk vs. risk framework. To do otherwise—to blindly follow the precautionary principle—means that anything new is guilty until it is proven innocent. It means that a scientific invention or a new technology that may offer life-saving benefits to millions of people can also be banned or severely restricted because it may present some risks.

It is often the case that the rich countries, because of their economic and political influence, are the ones setting global policy on food safety issues, while the poor countries of the world suffer the

⁴⁰Michela Wrong, *Field of Dreams*, FINANCIAL TIMES, Feb. 24, 2000, p. 12.

effects. C.P. Snow, British physicist, novelist and government official, noted the ethical issue:

“It is all very well for us, sitting pretty, to think that material standards of living don’t matter all that much. It is all very well for one, as a personal choice, to reject industrialization—do a modern Walden, if you like, and if you go without much food, see most of your children die in infancy, despise the comforts of literacy, accept twenty years off your own life, then I respect you for the strength of your aesthetic revulsion. But I don’t respect you in the slightest if, even passively, you try to impose the same choice on others who are not free to choose.”⁴¹

At a meeting in Nairobi in October 1999, scientists in developing countries took the view that the rich countries of the West were indeed trying to impose their views of biotechnology on developing countries and not allowing those countries to choose for themselves. Researchers with the Kenya Agricultural Research Institute (KARI) said that Europe and other developed countries fighting biotechnology are dealing with a problem of food surplus. But the use of genetically modified crops could boost food production and lower the price of staples in poor populations that are plagued by hunger.

At the meeting, John Wafula, a scientist with KARI, said: “Biotechnology development and application must be taken within the context for which Africa is craving—food production and survival.”⁴² Dr. Wafula further noted, “The use of high-yielding, disease-resistant and pest-resistant crops would have a direct bearing on improved food security, poverty alleviation and environmental conservation in Africa.”⁴³

In a direct reference to the then-upcoming Biosafety Protocol negotiations, another African scientist, Dr. John Mugabe, urged the African delegations to push for provisions that would strengthen their

⁴¹*Natural Luddites*, quoted in RICHARD RHODES, *VISIONS OF TECHNOLOGY* (New York: Simon & Schuster, 1999), p. 209.

⁴²Catherine Mgendei, *Local scientists snub the West in biotech war*, DAILY NATION, Oct. 21, 1999 <www.biotech_info.net/localscientists.html>.

⁴³*Id.*

countries' biotechnology capabilities: "Africa has comparative advantages in biotechnology. These include its enormous genetic diversity and prior scientific knowledge in agriculture. Biotechnology offers new opportunities to transform rural agriculture without undermining local ecologies and socioeconomic landscapes."⁴⁴

The fact that agricultural biotechnology may mean the difference between survival and starvation for many millions of people does not seem to affect those espousing elitist anti-technology views. In an article noting the life-saving potential of Golden Rice enriched with betacarotene, the precursor to Vitamin A, Margaret Mellon, Union of Concerned Scientists, said:⁴⁵

"There are 10 simple steps we could take right now to feed a billion hungry people, from building roads, to distributing iron tablets, to encouraging people to grow gourds in their back yards."

There seems to be no recognition that people in poorer countries lack resources to achieve these goals through such capital-intensive means. Agricultural biotechnology, however, because it can require less capital for small farmers to expend on synthetic pesticides, herbicides, and fertilizers, and because of demonstrated higher yields for many staple crops, can aid farmers in producing food beyond subsistence levels.

Elitists in developed countries, with full bellies, vast choices in food, and the resources to indulge in exotic choices of cuisine, see little value in current agricultural products of biotechnology. The first wave of products—or at least the ones they know about—provide at most marginal and largely invisible increases in consumer value. Highly subsidized farmers with enormous political clout and overproduction, particularly in the EU and Japan, see little need to increase yields and to engage in more productive agricultural techniques. Their interests are in preserving the status quo and protecting themselves from competition.

⁴⁴*Id.*

⁴⁵Michela Wrong, *op cit* note 40.

Farmers in the U.S. and Canada, two countries where biotech crops are widely planted, see the benefits of higher yields per acre and lower loss of their crops because of pests and diseases. However, these agribusinesses must have markets, and those now are largely in the developed world.

If the reaction against bioengineered crops intensifies and spreads, many large-scale farmers, as they see their markets shrink, will have little incentive to continue to plant those crops. Some countries, such as Brazil or New Zealand, may specialize in markets for non-biotechnology produced crops and possibly receive a premium on those exports.

If such shifts occur, they will significantly affect the ability of developing countries to make their own choices about the use of agricultural biotechnology products to improve food security. Already, the EU with its bans and moratoriums on biotech crops, has warned Thai exporters that they may reject Thai rice if any genetically modified organisms are found.⁴⁶

Reactions such as the EU's can have other unintended consequences for people in developing countries. Most of the research and development in biotech is done by profit-making firms with the aim of supplying products for the developed world. Non-profit organizations and foundations are the principal facilities for research on the needs of developing countries—the Rockefeller Foundation, the International Rice Research Institute, and others. The Rockefeller Foundation, for example, provided primary funding for research on Vitamin A-enhanced Golden Rice and other crops important to the developing world. In many cases those organizations cooperate with governments and with for-profit research facilities. As for-profits find their markets shrinking and as policy makers succumb to anti-biotech activists, resources for the developing world's agricultural biotechnology needs are likely to be sharply curtailed. A decline in profit-making research in the West will starve developing countries of basic research.

⁴⁶Per Pinstrup-Andersen, *Agricultural Biotechnology, Trade, and the Developing Countries*, AGBIOFORUM, Vol. 2, Nos. 3 & 4, Summer/Fall 1999 <www.agbioforum.org>.

A scientist, Professor C.S. Prakash, of Tuskegee University, has organized a declaration entitled *Scientists in Support of Agricultural Biotechnology*. It has already been signed by more than 1900 scientists, including Nobel Prize winners Norman Borlaug, the father of the Green Revolution, and James Watson, discoverer of the structure of DNA.⁴⁷ (The declaration appears as an Appendix to this paper.)

Dr. Prakash has also eloquently expressed his own thoughts on the critical need for biotechnology:

“We have the means to end hunger on this planet and to feed the world’s six billion—or even nine billion—people. For the well-fed to spearhead campaigns and suppress research into potential solutions for ideological or pseudo-scientific reasons is downright irresponsible and immoral.”⁴⁸

⁴⁷See Ronald Bailey, *Billions Served: An Interview with Norman Borlaug*, REASON, Apr. 2000; JAMES D. WATSON, *THE DOUBLE HELIX*, W.W. Norton 1981 (Paper ed.).

⁴⁸C.S. Prakash, *Feeding a World of Six Billion*, *op cit.* note 46.

APPENDIX

Scientists in Support of Agricultural Biotechnology

We, the undersigned members of the scientific community, believe that recombinant DNA techniques constitute powerful and safe means for the modification of organisms and can contribute substantially in enhancing quality of life by improving agriculture, health care, and the environment.

The responsible genetic modification of plants is neither new nor dangerous. Many characteristics, such as pest and disease resistance, have been routinely introduced into crop plants by traditional methods of sexual reproduction or cell culture procedures. The addition of new or different genes into an organism by recombinant DNA techniques does not inherently pose new or heightened risks relative to the modification of organisms by more traditional methods, and the relative safety of marketed products is further ensured by current regulations intended to safeguard the food supply. The novel genetic tools offer greater flexibility and precision in the modification of crop plants.

No food products, whether produced with recombinant DNA techniques or with more traditional methods, are totally without risk. The risks posed by foods are a function of the biological characteristics of those foods and the specific genes that have been used, not of the processes employed in their development. Our goal as scientists is to ensure that any new foods produced from recombinant DNA are as safe or safer than foods already being consumed.

Current methods of regulation and development have worked well. Recombinant DNA techniques have already been used to develop 'environmentally-friendly' crop plants with traits that preserve yields and allow farmers to reduce their use of synthetic pesticides and herbicides. The next generation of products promises to provide even greater benefits to consumers, such as enhanced nutrition, healthier oils, enhanced vitamin content, longer shelf-life and improved medicines.

Through judicious deployment, biotechnology can also address environmental degradation, hunger, and poverty in the developing world by providing improved agricultural productivity and greater nutritional security. Scientists at the international agricultural centers, universities, public research institutions, and elsewhere are already experimenting with products intended specifically for use in the developing world.

We hereby express our support for the use of recombinant DNA as a potent tool for the achievement of a productive and sustainable agricultural system. We also urge policy makers to use sound scientific principles in the regulation of products produced with recombinant DNA, and to base evaluations of those products upon the characteristics of those products, rather than on the processes used in their development.

[EDITOR'S NOTE: The declaration *Scientists in Support of Agricultural Biotechnology* was developed by Professor C.S. Prakash of Tuskegee University. It was released at a press briefing held in Montreal, Quebec, Canada, on January 22, 2000 in conjunction with the Biosafety Protocol negotiations. The briefing was sponsored by International Consumers for Civil Society.

As of March 22, 2000, more than 1900 scientists have signed the Declaration, including Nobel Prize winners Norman Borlaug and James Watson. See <www.agbioworld.org>.]

ABOUT THE AUTHOR

FRANCES B. SMITH is Executive Director of Consumer Alert, a national consumer group with headquarters in Washington, D.C., where she directs the policy analysis, administrative, and consumer education work of the organization. She is also the coordinator of the National Consumer Coalition (NCC), an on-going coalition of 27 market-oriented national and state-level organizations representing four million consumers, which focuses on consumer issues in the policy arena.

In late 1999 Smith founded International Consumers for Civil Society (ICCS), an international coalition of market-oriented non-profits, which currently has 20 member organizations in nine countries around the world, including Bangladesh, India, South Africa, Venezuela, South Korea, the United Kingdom, Belgium, The Netherlands, and the United States. ICCS and Consumer Alert were registered as Non-Governmental Organizations (NGOs) at the Biosafety Protocol negotiations in Montreal, Quebec, in January 24-28, 2000. Both organizations were also NGOs at the World Trade Organization meeting in Seattle, Washington, November 29–December 3, 1999.

In her position at Consumer Alert since 1994, Smith testifies before Congressional committees, comments to federal agencies, and joins in legal briefs on issues that have a substantial consumer impact. She is a frequent speaker and guest on television and radio programs, where she discusses a broad range of consumer issues and concerns. Her articles have appeared in such publications as *USA Today*, *Detroit News*, *Washington Times*, and *Legal Times*. Smith is also a contributing editor at *Consumers' Research* magazine and writes a monthly column distributed to newspapers in the U.S. to help consumers make more informed decisions in their everyday lives.

Consumer Alert, founded in 1977, is a national consumer group that assesses public policy proposals for their effects on consumers, promotes the importance of sound science and sound economic data to underlie public policy, and provides consumer educational materials on topical consumer concerns. Consumer Alert points to the consumer value of a market economy in increasing consumer choice and competition, which leads to lower prices and advances in technology that can improve health and safety.