If Women Mattered:
A Critical View of the Canadian Biotechnology Strategy and Alternative Visions for Community Action

Commissioned by:
The Working Group on Women, Health and the New Genetics

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CONTENTS

Preamble:

The Working Group on Women, Health and the New Genetics brought together Canadian academics and community activists concerned with the impact of the new genetics and biotechnology on women's health. The group adopted feminist and social justice principles. Many individuals involved in Working Group projects continue to be active in the area.

The main focus of the Working Group was the Canadian Biotechnology Strategy (CBS), a policy document of the federal government that promotes the Canadian biotechnology industry. The Group was concerned about the lack of attention to the implications for women's health in the CBS and on the part of the Canadian biotechnology industry as a whole.

In February 2000, the Working Group held a workshop in Toronto at which many of these issues were discussed. This resulted in publication of the Workshop Proceedings, "The Gender of Genetic Futures: The Canadian Biotechnology Strategy, Women and Health", a 204 page document rich in substance and strategies on these issues. As well, two other resources have been produced. A 21-page booklet by Anne Rochon Ford (Commissioned by the Working Group), "Biotechnology and the New Genetics: What it Means for Women's Health", provides a brief overview and "primer" on the issues and addresses their relevance to women. Focusing mainly on agricultural biotechnology and biotechnology in health care and medicine, it forms a background, companion piece to this document and we recommend it be read first.[1]

Participants at the workshop suggested that a resource be developed to review some of the shortcomings of the CBS and provide alternate ways of thinking about a Canadian biotechnology strategy. The document was to highlight some of the implications of the CBS for women and their families. As this project evolved, it also became an "action guide" – a tool for people interested in the issues to find further information and link with others. All these resources are meant to encourage discussion and critical debate about the development and application of these technologies. They are available on the Canadian Women's Health Network website in English and French (www.cwhn.ca).

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1 This booklet is available on the web, through www.cwhn.ca, or in hard copy from the Canadian Women's Health Network: Suite 203, 419 Graham Avenue, Winnipeg, Manitoba, Canada, R3C 0M3. Telephone: (204) 942-5500. Fax: (204) 989-2355. e-mail: cwhn@cwhn.ca. Clearinghouse: 1-888-818-9172

PART I: THE BASICS

SECTION 1: Introduction

1.1 What is Biotechnology?

The definition of biotechnology is contentious. From one perspective, it includes a wide range of techniques that use living organisms to make products or perform functions; this choice of definition would be so broad that it would include many activities that are both traditional and new. It would include, for example, anything from fermenting beer to selective breeding of plants and animals. However, it is the more recent aspects of biotechnology that garner most attention. The new biotechnologies involve more complex processes such as cloning, recombinant DNA technology, or genetic engineering (GE) – the insertion of genes into plants and animals to create genetically modified organisms (GMOs). The mapping of the human genome and a better understanding of the DNA structure of other living organisms have laid the basis for new developments and refinements in biotechnology. In this discussion, we focus on some of the implications of genetic engineering techniques applied to health and agriculture.

Biotechnology offers enormous potential for commercial applications in agriculture and health care. Crops are being genetically altered to be more herbicide tolerant or insect resistant. New food products are being developed through the use of genetic engineering. And, finally, commercial applications in health care range from genetic tests, new types of drugs and vaccines, growth of tissue for transplants and experimental gene therapies.

The Canadian government allocates billions of dollars to stimulate commercial applications of biotechnology and genomic research. By doing so, the government determines a particular course of economic and social development and exclude others. In our view, the federal government is proceeding with a CBS strategy, and with related international agreements, without sufficient citizen involvement and debate. While biotechnology affects everyone, most individuals and organizations don't have access to clear, balanced information about the scope of biotechnology, its potential health and environmental impacts, and about the profound social and ethical issues raised by certain types of research and development.

Scientific and technological developments in biotechnology do not forge ahead "on their own", but are the outcome of decisions taken by certain interest groups. Governments craft legislation and regulatory policies and allocate resources that facilitate growth of the industry; they also invest in possible applications of biotechnology for military research. Industry invests venture capital, merges companies, and seeks higher profit margins by trying to increase its global market shares. Researchers within academic and other institutions choose to pursue certain types of biotech research. Such policies and investments require, and reinforce, partnerships among government, industry and various researchers, a pattern tending to exclude groups in civil society not considered direct stakeholders to the decisions being taken.

In the following discussion, we argue that other voices must also be heard to address the ethical, political, economic and social forces shaping biotechnology policy in Canada.

1.2 Why An Action Guide?

The federal government has the responsibility to review and evaluate new technologies and products before they are released onto the market. Governments also use subsidies, tax incentives, intellectual property law and regulations to support industries. Yet, there is growing public concern about how well this regulatory role is being carried out for all products, including those involving biotechnology.

The applications of biotechnology to health and agriculture are largely invisible to most people. For example, few Canadians know we are eating genetically engineered products daily – in processed foods containing soy, corn and canola oil, and in vegetables such as the potato:

> The first genetically modified organism to be introduced in Canada was herbicide tolerant canola in 1995, and there are currently 38 GE crops approved for environmental release and commercial application. Crops such as herbicide tolerant and insect resistant corn, soybeans and potatoes have been introduced into the Canadian food system. Indeed, it is now estimated that over 60% of all processed foods sold in Canada contain GE ingredients (Abergel, 2000).

Canada has a voluntary labelling system – there is no requirement that consumers be notified of the presence of GE products in their foods. Applications of biotechnology in health care appear even more complex and less accessible to patients. While people hope for "technological breakthroughs" in curing major diseases, such as cancer, and in improving the quality of life, they are often called upon to make decisions about complex therapies based on biotechnology, technologies about which they know very little.

Many consumers and scientists are calling for more rigorous review, greater public accountability and more open debate on the risks and benefits of genetically modified plants and animals, new medical tests and therapies and other applications of biotechnology

This "Action Guide" encourages critical questioning and debate. It takes a brief look at some aspects of the Canadian government's policy on biotechnology – the Canadian Biotechnology Strategy (CBS) – and its implications for women and women's health. It then explores some alternative principles and approaches to promote health protection and the public good.

While this document was being prepared, two major reports reinforced the need for critical review of Canadian government biotechnology policies and practices.

(1) The Auditor General of Canada released his report on February 6, 2001, highlighting under-funding, staff shortages and serious limitations within the Canadian Food Inspection Agency

(2) The Report of The Royal Society of Canada, *Elements of Precaution: Recommendations for the Regulation of Food Biotechnology in Canada* was released Jan. 30, 2001. Established at the request of Health Canada, the Canadian Food Inspection Agency and Environment Canada, this independent expert panel provided a major critique of the current processes and procedures related to regulation of food biotechnology in Canada. It recommends significant changes in the methods currently used to evaluate health risks and in mechanisms for public accountability (Royal Society of Canada, 2001).

Both reports underscore the need for action.

1.3 Why women and the CBS?

Women make up approximately 52% of the Canadian population, but are a minority of the policy decision-makers in government and industry. As a result, women's situations and concerns are often not taken into account in policies that affect them. Policies are assumed to have the same impacts on women and men when this is frequently not the case.

In 1995, the Federal Government released *The Federal Plan for Gender Equality,* challenging all departments of government to integrate gender into their programs and policies. This is to be done by conducting "gender-based analysis", a careful review of how policies and programs might take into account the differing social roles, economic circumstances and physical differences between women and men, boys and girls (Health Canada, 1999; 2000). Unfortunately, the CBS makes no attempt to apply a "gender lens" to its policies and programs.

Biotechnology affects women in a number of specific ways*:*

- Women are the majority of the world's farmers, especially poor farmers, and are profoundly affected by agricultural biotechnologies. Yet, they own almost none of the world's agricultural resources and capital.

- Women are most often the ones who buy and prepare food for their families. These roles require them to make decisions about family nutrition, and how best to spend often limited household resources for food.

- Women are the major users of health care services and of pharmaceutical products, increasing numbers of which involve biotechnology. Many new products, therapies and procedures have been tested for short periods of time, sometimes only on men, or on small numbers of women, before being introduced into clinical practice.

- Because of child-bearing, women often make choices about, and undergo, prenatal or other genetic screening/testing.

- As primary, usually unpaid, caregivers of children, the sick, the elderly and persons with disabilities, women make decisions about, and administer, drugs or other treatments.

- Because of these roles and responsibilities, women are major targets for product advertising.

- Women are the majority of workers in the health sector where the applications of biotechnology are concentrated.

As well, many medical technologies and therapies have been introduced to "manage" the physical transitions in women's lives (e.g. childbirth, menopause), too often without resulting in improved health. Many women are concerned that the applications of biotechnology may further this process of medicalization.

SECTION 2: The Canadian Biotechnology Strategy

2.1 Background and Vision of the CBS

The Canadian government released the Canadian Biotechnology Strategy (CBS) in 1998. The framework lays out the federal government's role in the development and use of biotechnology in Canada, and as an exporter of the technology and/or its products to other countries. This policy framework updates earlier policies in support of biotechnology. These include:

- 1981 - The first federal Task Force on Biotechnology published its report, noting that "the almost total absence of biotechnology industrial activity in Canada" necessitated a "technology-push" rather than a "market-pull" approach to industrial development.

- 1983 - The National Biotechnology Strategy (NBS) was intended to stimulate research and development, investment, commercialisation and markets for biotechnology in Canada.

?? 1985 - In an influential report, The Science Council of Canada stated: "Biotechnology may generate the last major technological revolution of the 20th century. The promise is already turning to profit; the pace is rapid; the potential is vast and exciting." (Science Council of Canada. S*eeds of Renewal: Biotechnology and Canada's Resource Industries*. Ottawa. 1985).

?? 1993 – After public consultation, the federal government announced a regulatory framework for biotechnology products, including a commitment to maintain high standards for protection of human health and the environment.

The stated vision of the 1998 CBS is:

> To enhance the quality of life of Canadians in terms of health, safety, the environment and social and economic development by positioning Canada as a responsible world leader in biotechnology.

The guiding principles of the Biotechnology Strategy involve:

> reflecting Canadian values; engaging Canadians in open ongoing, transparent dialogue; promoting sustainable development, competitiveness, public health, scientific excellence and an innovative economy; and ensuring responsible action and cooperation domestically and internationally (Canada, 1998a:8).

2.2 The CBS: Conflicting Themes

Ten themes form the basis for "a concrete action plan" for biotechnology in the CBS.

Themes in the CBS Workplan (Canada, 1998c)

(1) Building public confidence and awareness, and communicating accurate balanced, easy-to-understand information to Canadians.
(2) Further expanding Canada's R & D and science base to support Canadi competitiveness in biotechnology as well as the regulatory system.
(3) Regulating to protect health and the environment.
(4) Promoting the use of biotechnology for public health and safety.
(5) Modernizing Canada's intellectual property laws.
(6) Facilitating measures to help accelerate the application and commercialisation of new technologies.
(7) Demonstrating responsible world leadership to improve market access and acceptance as well as stewardship in developed and developing countries.
(8) Developing human resources.
(9) Improving policy-relevant data collection and analysis.
(10) Building sector strategies and action plans.

These guiding principles and themes deserve close attention because they reveal contradictions and the potential for conflicts of interest in the federal government's biotechnology policies. For example:

?? Some of the themes (2,5, and 6) are specifically directed towards expanding the biotechnology industry in Canada and creating mechanisms, such as increased patent protection, to speed up the application and commercialisation of the new technologies. In contrast, theme 3 addresses the regulation of biotechnology to protect health and the

environment.

- Theme 7 balances two often competing goals – "developing responsible world leadership to improve market access and acceptance", with "stewardship in developed and developing countries". The rapid push of products to market is rarely consistent with independent scrutiny and careful attention to public health and safety.

- "Building public confidence and awareness, communicating accurate, balanced and easy-to-understand information to the public" (theme 1), should be consistent with principles of transparency and with sound data collection and analysis (theme 9). But, these principles may conflict with commitments to increase patent protection over new processes and products, including life forms, that limit public access to information and knowledge (theme 5).

- Some themes are ambiguous. Does "promoting the use of biotechnology for public health and safety" (theme 4) include rigorous evaluation of biotechnology in its applications to public health, or does "promoting" suggest marketing and public relations?

2.3. The CBS: Who is responsible?

Responsibility for carrying out the CBS action plan is divided among a complex web of government departments and their various branches, bureaus and directorates. Seven departments, each with its own goals and mandate, are directly involved in the CBS and are represented on a Biotechnology Ministerial Coordinating Committee. Significantly, the Committee is chaired by Industry Canada. Other departments include: Health Canada, Agriculture and Agri-Food Canada, Environment Canada, Natural Resources Canada, Foreign Affairs and International Trade, and Fisheries and Oceans. (In 2001, there were 22 biotech-related committees among these departments).

Different aspects of biotechnology are regulated by different pieces of legislation: the Food and Drugs Act, the Canadian Environmental Protection Act, Fertilizers Act, Seeds Act, Health of Animals Act, Pest Control Products Act, and the Fisheries Act. The regulatory departments and agencies responsible are Health Canada, Environment Canada, Fisheries and Oceans, Canadian Food Inspection Agency (CFIA) and the Pest Management Regulatory Agency (PMRA).

As well, the Canadian Biotechnology Advisory Committee (CBAC) was established in Fall, 1999, to provide advice to the federal government on ethical, social, regulatory, economic, environmental and health issues related to the development and application of biotechnology. CBAC commissions research papers for public review and discussion. Established to be "arms-length" from government, it occupies offices next to the government CBS secretariat.

Part II: A Closer Look at Some CBS Themes

SECTION 3: Promotion and Regulation: Conflicting Interests?

3.1 Promoting Competitiveness

Further expanding Canada's R&D and science base to support Canadian competitiveness in biotechnology as well as the regulatory system. **(CBS Workplan, theme #2)**

Modernizing Canada's intellectual property laws
(CBS Workplan, theme # 5)

Biotech means Business

- Revenues from Biotechnology in Canada: $2 billion (1999), expected to exceed $5 billion in 2002.
- Spending in biotech research and development in Canada: $827 billion (1999), up 19% from 1998, expected to be almost $1.5 billion in 2002.
- Canadian biotech firms' exports: Over $700 million (1999), expected to be 1.7 billion in 2002.
- Canada's rank in world biotechnology market: 3rd
- Canada's rank in the world in the number of biotechnology companies per capita: 1st

Source: BIOTECanada, 2001

The primary focus of the CBS is to support competitiveness in the biotechnology industry. Despite the impacts of modern biotechnologies on health, agriculture, the environment, and human rights, Industry Canada is the lead department in implementing the CBS.

Canada has positioned itself as a major international player in the business of biotechnology. Federal government investments in biotech research and development are directed to biotech firms, universities (increasingly to university-industry partnerships), Agriculture and Agri-food Canada, among others. Generous tax credits are also used to stimulate investments. Revenues from biotechnology (approximately $3 billion in 2001) are rapidly increasing (BIOTECanada, 2001).

Hot issues in Patenting: The Oncomouse and TRIPS

In August, 2000, the Canadian Federal Court of Appeal issued a 2-1 split decision that granted ownership of the Oncomouse to Harvard College in Boston. The Oncomouse is a genetically altered rodent designed to be susceptible to cancer and used in cancer research. In response, the Canadian federal government is appealing the case to the Supreme Court of Canada.

A Supreme Court ruling in favour of the patent would set a Canadian precedent for patenting of other life forms. The case raises crucial issues about corporate control over biotechnology research and its applications in Canada.

In addition, industrialized countries and developing countries divided on the WTO Agreement on Trade Related Aspects of Intellectual Property Rights (TRIPS), which requires WTO members to make patents available for any inventions (products or processes), including micro-organisms and plant varieties. Many developing countries are concerned that TRIPS will further accelerate the ability of the private sector to appropriate traditional knowledge to secure private, corporate profit (Shore 2001).

Patent laws are seen as a key mechanism for promoting industry research and development in biotechnology. Patents enable a maker of a product or invention to have an exclusive monopoly over their product for a period of time – 20 years in Canada and most industrialized countries. Patents benefit transnational corporations who control the monopoly and so set the price on seeds, drugs and other products and processes, at the expense of small farmers and consumers. There is increasing pressure on Canada from court challenges, the U.S. and through the World Trade Organization and TRIPS (Agreement on Trade Related Aspects of Intellectual Property) to extend patent protection to life forms, such as genetically-engineered micro-organisms, plants and animals, human genes and gene-fragments. The CBS commitment to "Modernizing

Canada's intellectual property laws" (CBS theme #5) seeks to enhance economic benefits to the biotechnology industry and its investors.

Canadians need independent, well-researched information about the impacts which proposed patent law changes will have on the costs of drugs, tests and therapies in health care, and on the economics of Canadian agriculture, particularly for small farmers. Patenting of life forms also raises profound moral and ethical issues that Canadians must address. (For background information on patents in Canada and internationally, see commissioned papers from the Canadian Biotechnology Advisory Committee, CBAC, 2001).

3.2 Regulating health and environmental protection

Regulating to Protect Health and the Environment **(CBS Workplan, Theme #3)**

> The relationship between a regulator and the regulated … must never become one in which the regulator loses sight of the principle that it regulates only in the public interest and not in the interest of the regulated.
>
> Source: Justice Krever. (1997) *Commission of Inquiry on the Blood System in Canada* Vol. 3, p. 995.

The government has a mandate to ensure that public health and safety and environmental protection are not compromised by the introduction of these technologies and processes. However, given the government's financial support and promotion of the biotechnology industry, there is increasing concern that the federal government's role as industry regulator is being compromised. Independent reviewers, scientists, and the Canadian public are calling attention to conflicts of interest in these roles. For example:

- In 1999, a Senate Committee found that Canada's regulatory system was insufficient in dealing with Genetically Modified Organisms (GMOs), and that the interests of drug manufacturers and producers were given undue consideration over the short- and long-term health and safety of Canadians (Canada, 1999).
- The Royal Society of Canada report (2001) called attention to "the conflict of interest created by giving to regulatory agencies the mandates both to promote the development of agricultural biotechnologies and to regulate it". The Expert Panel specifically focused on the conflict of interest and lack of transparency within the Canadian Food Inspection Agency (CFIA). They considered this "of critical importance in maintaining the integrity of science upon which the regulation of agricultural biotechnology should be based and in maintaining public confidence in the regulatory processes "(Royal Society of Canada: ix; 211-218).

SECTION 4: SELLING, NOT TELLING

4.1 Producing Balanced Information?

Building public confidence and awareness, and communicating accurate, balanced, easy-to-understand information to Canadians **(CBS Workplan, theme #1)**

The CBS Workplan identifies the need to gather and communicate information, in part to alleviate the concerns of citizens about bias. However, the emphasis on promoting commercialisation and trade over regulation influences the kind of information provided by government to the public about biotechnology.

For example, in describing biotechnology, the Canadian government underplays its complexities, challenges and risks:

> Biotechnology is an umbrella term that covers a broad spectrum of scientific tools and techniques, ranging from traditional uses of living organisms such as yeast in bread or bacteria in yoghurt to more advanced techniques such as genetic engineering. Biotechnology uses living organisms, or parts of living organisms, to make new products or provide new methods of production (Canada, 1998c, 2).

Industry Canada stops at this definition, without elaborating on the controversy surrounding the more advanced techniques. They leave the impression that the new technologies are equivalent to well-known, benign examples of yeast in bread-making or bacteria in yoghurt. The experimental nature and consequent risks of applying genetic engineering to foods and health care are not addressed.

Other CBS documents promote the benefits of biotechnology through reports directed to industry and investors. *Canadian Biotechnology Statistics,* a document produced "in support of the implementation of the Canadian Biotechnology Strategy", includes data about "positive influences" and "benefits" associated with the adoption of biotechnologies (McNiven, 1999). Readers are reassured that risks are assessed and managed; there is no report of any downside or uncertainties.

4.1.a Targeting Women

> Most family decision-makers with respect to food and nutrition are women so popular women's magazines would likely be a good forum, as would early morning television.
>
> Source: Summary Report (1999) Round-Table on Communications and Biotechnology. Hosted by Lyle Vanclief, Minister of Agriculture and Agrifood. April 12, 1999. See: www.tao.ca /~brad/CanadianLiving.pdf)

Documents funded by the federal government specifically target women as the appropriate recipients of information about food biotechnology:

?? In 2000, The Canadian Food Inspection Agency (CFIA) distributed a booklet, *Food Safety and You*, across Canada at taxpayers' expense. They also paid two of the largest Canadian consumer magazines - *Canadian Living* and *Coup de pouce* – to publish supplements on genetically modified foods. The publications asserted the safety of genetically engineered food; information acknowledging the lack of long-term health studies was not included (see Ford, 2001).

As Mark Abley from The *Montreal Gazette* noted:

> To dissipate suspicions about the safety of biotechnology, the industry has chosen to make women the main targets of its public-relations thrust. Women form an overwhelming majority among readers of both magazines (Abley, 2000).

Significantly, polls have shown that women are more suspicious of biotechnology than men (Environics- 2000). Yet, women are treated as a group to be managed through public relations, rather than major stakeholders to be consulted. The federal government's awareness that *gender matters* in biotechnology policy has not been directed to evaluating the different impacts which biotechnology and the CBS might have on women and men, as directed by federal policies.

4.1.b Public Input

Opportunities for assessing some of the impacts of biotechnology on the lives of Canadians are provided through the Canadian Biotechnology Advisory Committee (CBAC). CBAC has commissioned research papers on priority topics, including intellectual property and patenting of higher life forms, genetic information, and genetically modified foods. These are posted on their web site (www.cbac-cccb.ca), and reflect a diversity of opinions and approaches, including some attention to ethics and human rights (Sherwin, 2001; von Tigerstrom, 2001; Mooney, 2001).

CBAC has also initiated public consultations on key issues. However, the CBAC consultation process on Regulation of Genetically Modified Food in the spring of 2001 was not without controversy. The process was boycotted by approximately 60 non-governmental organizations who argued that the terms of reference for the CBAC Committee and the consultation process were narrowly defined and inadequate, that the Committee itself was chosen through a process that favoured the representation of industry views; that the consultation document did not identify options such a moratorium on future releases of GE products or a review of existing products, and that the short notification period prior to the consultation did not allow NGOs sufficient preparation time (Alberta Organic Assoc. et al, April 12, 2001; see response on CBAC website). In particular, the NGO group called on CBAC to recommend that the government do what it should have done all along: hold Parliamentary hearings on the issue of GM foods so that Canadians are able to engage in a democratic process concerning genetic engineering policy in Canada. It remains to be seen how CBAC's recommendations to the federal government will address the critical, alternative perspectives put forward by consumers and many researchers/academics, including the strong critique by the Expert Panel of the Royal Society of Canada of the federal government's conflict of interest as regulator and promoter of biotechnology.

CBAC does not offer an explicit plan to ensure women's perspectives and voices are equally heard in documents and public consultations. While approximately one third of the 21-person CBAC Board are women, there is a need for a proactive plan to ensure the diversity of Canadians, including women, are heard.

The federal government faces a significant challenge in implementing its plan to support the biotechnology industry in Canada. Polls show the public believes that government is not sincere about listening to citizens, and that consultation processes are dominated by the corporate sector (Environics, 1998:13).

SECTION 5: A World Leader?

5.1 Trade and Stewardship: Who Benefits?

Demonstrating responsible world leadership to improve market access and acceptance as well as stewardship in developed and developing countries. **(CBS Workplan, Theme # 7)**

Advocates suggest that agricultural biotechnology is needed to feed the world, for better more nutritious food, and for a less toxic environment. But …

- According to the United Nations World Food Programme, "sufficient food is produced at a global level to meet the needs of every individual alive" – nevertheless an estimated 800 million people go hungry (UN, 1998). There is little hard research and much debate about whether agricultural biotechnology is safe, less toxic for the environment, and more beneficial for women, men and children than sustainable agricultural practices. What is clear is that transnational corporations, which own patents for seeds, pesticides and genetically engineered animals appear to reap the benefits of agricultural biotechnology.

?? To date, the genetically altered foods approved in Canada have little to do with increasing nutritional content: the majority of approvals have been for herbicide resistant strains (CAC & FBCN, 1999), which allow for increased use of toxic chemicals on crops.

?? The development of "Golden Rice" as a genetically engineered solution for Vitamin A deficiency in many poor countries has been touted as an important exception to the general trend. There are, however, many concerns about the usefulness of such an approach: the children its promoters claim it will help would have to eat 15 pounds of Golden Rice a day to satisfy their minimum daily Vitamin A requirement. Moreover, the recent privatisation of this formerly public research project raises questions about how accessible this rice will ever be (RAFI, 2000a; 2000b).

?? Genetically modified crops require more herbicides than farmers were first led to believe, driving up weed management costs (Montague, 2000). Roundup-Ready crops, made and patented by Monsanto, are genetically modified to withstand Monsanto's premier weed killer, Roundup. Contrary to company advertising, they require more than one application. Research on Roundup Ready soybeans indicates the need for increased application of herbicides, lower yields than conventional varieties and the possibility of increased herbicide resistance (www.biotech-info.net/troubledtimes.html).

?? Internationally, Canada is known as a major producer and promoter of genetically engineered foods. Yet attempts to promote such crops as GM canola for export may undermine Canadian agricultural exports in the long term, with implications for Canadian jobs and international trust in Canadian products (see Box below).

> "...until 1997, Canadian GM canola was segregated from normal canola, but the industry then decided to end segregation. However, since Europe hasn't approved GM canola, Canada lost the EU market to non-GM canola from the US. This was not a brilliant business strategy. Now, instead of re-instituting segregation, the Canadian grain industry says it's impossible, (although it was possible before) and wants to force the EU to accept GM canola…
>
> On health issues, Canada is attempting to foist hormone-laced beef products and asbestos on Europeans – So much for environmental protection and concern for human health. Ottawa's policies on all of these complex public interests can be summed up in two words. "We're exporters" (and damn the rest).
>
> An Asian delegate at the biosafety meetings said to me, "Canada used to be such a positive influence at the UN. What's happened?" Whatever it is, it's embarrassing to be a Canadian at international meetings."
>
> Source: Michelle Swenarchuk (1999) Canada's heavy-handed trade negotiations, *Intervenor*, vol. 24, no. 3 (July-Sept), p. 6.

The shift from the small farm to agri-business is pushing women and their families off their land and out of their livelihood. In Canada, twenty-six percent of all farm operators (including partners) are female (Stats Can, 1995). Family farms are competing with multinational chains that are from one thousand to one million times larger (NFU, 2000). Yet, women comprise only a fraction of the owners and managers of major corporations, including large agri-businesses. (For example, none of nine elected officers of Cargill, a multinational agribusiness chain operating in Canada with 1999 revenues of $75 billion, are women. See: www.cargill.com).

Agricultural biotechnology is a major part of the growing industrialisation of agriculture in Canada and around the world. As the majority of food producers and agricultural workers, and as the ones primarily responsible for food preparation, women are major stakeholders in ensuring the safety

and sustainability of agricultural practices, but control only a small fraction of the world's resources (USAID, 1997).

PART III: Building Alternatives

Section 6: Visions and Actions

6.1 Campaigns and social movements

Many individuals and organizations – in Canada and internationally – have protested the introduction of biotechnology into food production, animal breeding, and the environment because of the lack of sound, scientific knowledge about long-term impacts and because of inadequate public consultation. Protests take many forms: public campaigns and boycotts have targeted supermarkets and producers of GMO foods; education and media campaigns raise awareness about the loss of biodiversity in plants and animals. Some people have engaged in direct action, uprooting and burning experimental fields used by the industry.

Protests at World Trade Organization (WTO) meetings receive much media attention. In focusing on the WTO negotiations, protesters raise the public profile of issues such as who benefits from globalisation and trade, the influence of corporations over national governments, and how to achieve authentic sustainable development. In particular, they reveal how far-reaching decisions about patenting of life forms and expansion of biotechnology are made, and by whom. To date, protesters have not been given access to the formal or informal WTO process, but are forcibly kept out. In contrast, industry representatives are welcomed as corporate sponsors of receptions and other events for delegates (Bryden and Baxter, 2001).

At the protests, individuals and non-governmental organizations come together in church basements and community halls to share information and strategies for influencing national and international bodies. Many sectors of Canadian civil society are involved in this broad social movement, including citizen, consumer and environmental groups, labour unions, farm organizations, church groups, educators, ethnic, women's and seniors' organizations. (See www.defenders.org/btcorn.html; www.canadians.org).

People opposed to genetically engineered foods have had many successes in Western Europe where the pressure has been directed primarily at corporations, rather than at government regulation, as in North America. In response to public pressure, some corporations have refused to sell, grow or use genetically altered foods. For example:

- In August, 2000 the Swiss firm Novartis AG, one of the world's largest producers of genetically modified seeds, announced it would no longer use genetically altered materials in its food products, like Gerber baby foods and health foods, such as cereal bars (Abbott, 2000).

- The UK's four biggest supermarket chains have removed all products containing genetically modified substances from their shelves.

- Kellogg's uses genetically modified ingredients in its cereals sold in North America, but has stopped using them in its cereals sold in Europe. (See Greenpeace Canada web site: www.greenpeacecanada.org/e/campaigns/ge/)

6.1.a The Campaign Against recombinant Bovine Growth Hormone (rBGH)

One example of a successful Canadian campaign was the fight against the recombinant bovine growth hormone (rBGH also known as rBST). This genetically-engineered drug was developed by the multinational corporation, Monsanto, to increase milk production. Cows injected with rBGH suffer from a higher incidence of udder infections, reproductive disorders, lameness, and premature death. rBGH had two possible implications for human health: possible residues in milk from increased antibiotic use to deal with these side-effects, and the presence of an agent in rBGH milk which has been linked to cancer.

In 1998, Monsanto submitted data to Health for approval of rBGH for use and marketing in Canada. At the same time that the federal government was reviewing the data to ensure the product was safe for animal and human health in Canada, on the international stage, Canada was arguing against further reviews by the CODEX Alimentarius, the body that sets international standards for foods (CODEX is the standard setting body relied on by the World Trade Organization). In fact, persons with ties to Monsanto were a part of the Canadian delegation to CODEX meetings.

Despite this, in 1999 rBGH was **not** approved for use in Canada.

Key elements in the successful rBGH campaign

- Support for a cause both within and outside government and among a wide cross-section of organizations;
- Involvement of opposition political parties and persons with influence;
- Support for the issue by scientists with expertise, willing to speak out on the issue;
- Public and media attention over a period of time;
- A clear issue to rally around;
- Documented revelations that damaged the corporation's credibility and image

A number of factors appear to have been involved in this outcome:

(1) ***Public outcry*****:** Members of Parliament and government officials received hundreds of letters on this issue; constituency offices of some MPs were inundated with phone calls protesting approval.

(2) ***Broad coalition-building:*** A wide range of organizations were actively opposed to rBGH and organized against it, such as the National Farmers Union, Council of Canadians, and the Sierra Club.

(3) ***Media attention:*** One CBC Radio reporter in particular followed the issue closely and kept it in the public eye.

(4) ***Whistle-blowing:*** A major factor was the public allegation by Health Canada scientists that they were being pressured to approve a drug they were not convinced was safe.

(5) ***Concern and opposition from the formal political system:*** Not only did opposition Members of Parliament take up the fight, but the Standing Committee on Agriculture and Forestry held public hearings resulting in a scathing report on rBGH and the issues of industry influence that surrounded it.

(6) ***Clarity of the issues:*** Most people have strong feelings about the safety of milk, consumed by young children as well as adults. In this situation, introducing a drug solely to increase milk supply and allow farmers to get more milk out of fewer cows, did not gain wide support. The drug had known detrimental effects on cows, there were questions about long-term safety for humans, and there was no need for more milk.

However, the issue is not over. rBGH is approved for use in the U.S., so Canadians who buy any U.S.-packaged food containing dairy products are likely consuming a rBGH-tainted product. As well, some Canadian dairy farmers may be using rBGH illicitly to increase milk production, as they can buy it freely across the border. The rBGH issue was a ten-year battle for a shaky victory.

6.1.b Nayakrishi Andolon: Sustainable Development in Bangladesh

Nayakrishi Andolon or "New Agricultural Movement" involves several hundred thousand farming and aquaculture families in Bangladesh in sustainable agriculture and community-building (UBINIG, 2000; Shore, 2000).[2]

Since 1990, centres have been set up in different regions of Bangladesh. These provide land for research and experimentation on food production without chemicals and pesticides; a community seed wealth centre for seed preservation; and facilities for community meetings, education, and cultural events. Rather than "training centres" or "models", the centres are a way to share knowledge and expertise about local situations (e.g. inland or coastal ecosystems), address local ecological problems (desertification, water scarcity, pollution from excessive pesticide use, declining biodiversity due to shrimp cultivation, etc), and create new knowledge and learning about sustainable food production, nutrition and healthier communities. Each centre addresses local needs and builds on local capacities. They also maintain links with other N.A. communities, national research centres, universities, NGOs, and government. Some centres have primary health clinics and schools as part of their services.

N.A. farmers seek higher yields and greater food security for the long term by preserving diverse, high quality seeds adapted to local conditions. They are slowly improving soil, forest and water quality. Based on agrarian knowledge and assessing the negative effects of past practices, they follow a number of rules. These include: no pesticide use (e.g. using multi-cropping and crop rotation to build soil fertility and pest management); the gradual decrease or no use of chemical fertilizers to ensure toxins do not leach into soil and water; and they agree that seeds and genetic resources are common to the community.

N.A. is a social movement that resists the patenting of genetic resources and life forms, including the privatisation of seeds. Its philosophy stresses the interdependence of humans and other life forms and sees food production as a cultural practice, not an industry. Artists, philosophers and weavers are involved in the communities. Production is measured not only by crop yields, but also by considering other impacts of new practices on a community.

As the ones with knowledge of technologies to preserve, conserve and germinate seeds, women are key players in this social movement. They are central to the National Seed Network in Bangladesh, which conducts an audit of existing species and varieties in local villages and maintains national gene bank standards. People recognize that the loss of seeds and knowledge over the past decades parallels a loss of women's power and their displacement from agriculture. NA is based on principles of empowering women and men to work together, creatively, to strengthen communities and their diverse resources. Many lessons can be learned from NA about sustainable development, sensitivity to gender differences and resistance to corporate agriculture.

6.2 Towards an Alternative Vision

2. UBINIG, Policy Research for Development Alternatives, is a well-respected NGO in Bangladesh. A prime mover in supporting farmers in these initiatives, their work receives Canadian funding from CIDA and IDRC, provided through the Canadian NGO, Inter Pares.

Many individuals and organizations in Canada are exploring how agricultural and health technologies can be used to reduce economic and social inequalities, improve the health and welfare of populations and sustain resources for future generations. There have been creative and substantive discussions about alternative approaches to current biotechnology policies in Canada. (For a sample of some contributions to this discussion, see: Miller, Weir, Mykitiuk, et al (eds.). 2000. *The Gender of Genetic Futures: The Canadian Biotechnology Strategy, Women and Health*, 2000; and "Science and the Public Good", Feb. 16, 2001. Conference. Council of Canadians, Ottawa, Ontario.).

Drawing from these approaches, we support the view that *a Canadian Biotechnology Strategy should promote the use of public resources for the public good*. This involves:

?? Considering the ethical and social implications of biotechnologies as the *basis* of policy-making, and not an add-on to the process.

?? Sustainable development – ensuring the resources of the present, particularly the planet's biodiversity, are available to future generations. (For example, this includes considering the applications of biotechnology in stabilizing or restoring contaminated ecosystems).

?? Public benefit – ensuring that through public policies, the gap between rich and poor are not widened, but narrowed; that government serves as a regulator of private interests and administers public assets for the public interest. This demands a prohibition on patenting of life forms.

?? A thorough, independent and open scientific review of methods currently used to assess the risks of biotechnology in health and agriculture, including implementation of the recommendations of the Royal Society of Canada Report (2001) and freedom of access to research and research results.

?? Applying the principle "To do no harm". Science should be practised with humility, recognizing what is not known.

?? Applying the Precautionary Principle to maintain and improve public health, environmental sustainability and the genetic diversity of life forms.

> The Precautionary Principle states that when there are reasonable scientific grounds for believing a process or product may not be safe for human health or the environment, precautionary measures should be taken even if cause and effect relationships are not fully established. Applying the Precautionary Principle involves: recognizing potential harm; recognizing uncertainty; taking anticipatory action. The Precautionary Principle puts the burden of proof to demonstrate safety on the innovator or perpetrator, not on the public.

?? A regulatory process that is free from commercial influence, transparent and accountable to the public.

?? Full public disclosure of genetically engineered products and required labelling of all GM foods.

?? Extensive public debate and dialogue with policy makers about potential risks and benefits of biotechnologies, with real policy impact.

?? Thorough consideration of alternative approaches and technologies, such as organic farming, particularly those with known benefits to public health and environmental sustainability; providing substantial funding for research and development of these sustainable alternatives.

?? Integrating health, environmental, labour, human rights and social justice commitments made by the federal government into any biotechnology strategies and policies.

?? Applying a gender-based analysis to biotechnology policies, as mandated in the Federal Plan for Gender Equality and in Health Canada's Women's Health Strategy, to ensure that policies and practices are assessed for any differing impacts on men and women, boys and girls.

Some Basic Questions for an "Alternative Canadian Biotechnology Strategy":

?? Will biotechnology provide safe, effective & affordable health care products and treatments?
?? What types of risks come with particular therapies and products? Are some groups or individuals more vulnerable than others?
?? What will be the effects (financial costs, human resources) of new therapies and products on our publicly funded health care system? Are there less costly, safer alternatives?
?? What are the impacts of biotechnology on the crisis facing family farms in Canada and around the world?
?? Will agricultural biotechnology provide safe, healthy and affordable foods?
?? In addressing current environment problems, will biotechnology applications create new concerns? How does it contribute to sustainable development?
?? Who are the stakeholders in these technologies? Who controls the technologies and the course of their development? Who benefits financially from extension of patents? Who loses access to resources?
?? How do we evaluate safety and benefits of experimental therapies to future generations? (e.g. What are the possible risks of genetically modified organisms (GMOs) to the viability and health of plants, animals and humans over the long term? What are the possible unintended consequences of gene transfer?) What do we know and not know?

With each of these questions, we ask:

?? Do women and men experience the risks, benefits and other impacts in similar or different ways?
?? Do persons who are economically and/or socially marginalized experience the risks, benefits and other impacts in similar or different ways to persons with adequate resources?

Women in Canada and internationally have learned many harsh lessons from the inappropriate uses of drugs, devices and other health and agricultural technologies in their lives. Experiences with diethylstilbestrol (DES), the Dalkon Shield intra-uterine device, and with exposures to tar ponds and other toxic waste in their neighbourhoods, have made women wary of promises that new technologies will only bring better health and improved social and economic conditions.

Women have also contributed valuable understandings and positive models about what determines good health for their families and their communities. These include not only appropriate, quality health care services, but freedom from poverty and violence, access to healthy food and clean water, affordable housing, social supports and being accorded dignity and equality, including the opportunity to work with others to shape one's community and future.

Globalisation and corporate influence over the development of biotechnology pose risks to the empowerment of women, their families and communities and to the resources upon which they depend. There are very different views about how public resources should be spent on development of these technologies and about who will benefit and who will not, but in a democracy, the debate cannot be avoided or suppressed. Canada could – and should – be a world leader, ensuring that public resources are directed to the public good, and that women's voices are not only heard, but matter, in setting policies for the future.

7.3 Strategies and resources for action

There are many ways to become involved in the issues raised in this Guide. A few basic suggestions are offered below. The organizations listed in the Appendix offer many options. Exploring their websites and resources provides a sense of the strength and depth of the social movement that has been developing for the past decades in response to these issues.

Organizing and educating yourself and others

?? Consider joining an organization active on biotechnology or related issues. Choose one that best suits you. Even if you don't have much time, the information they provide will help you stay informed. The organization benefits from your support.

?? Track an issue that interests you. Sharpen your critical skills by reading information produced by the World Trade Organization, the biotech industry, scientists, ethicists, government, poets, etc. Discuss the information with others, including children.

?? Pass on relevant information. If you use the internet, there are many ways to share knowledge about workshops, conferences, newsletters and the latest reports with others, such as through electronic listservs. If you love art or theatre, find creative ways to express what you know.

?? Become a bridge between groups. Invite a speaker from one of the groups listed to give a talk to your community centre, women's group, etc. New links enrich our understanding of issues and strengthen action.

?? Think locally and globally. Many Canadian development agencies work with international partners to counter decades of negative development and corporate practices. Activists and ordinary people in different parts of the world benefit from sharing experiences and mutual support. (For a listing of development NGOs, contact the Canadian Council for International Cooperation).

Lobbying and influencing government

This can be done as an individual, but is usually more effective as part of a group or coalition that has a coordinated strategy. For example, phone, write or arrange a meeting with your local MP. Ask for specific commitments about what the MP will personally do on the issue. Follow-up six months later to ask the MP what she or he has done.

Note: Brief yourself on an issue before meeting with a politician. Be aware of relevant policies and commitments (including internationally) the government has made, and needs to be accountable for.

?? Write to biotechnology decision-makers and advisors about your views.

Federal cabinet ministers and their departments involved in biotechnology:

Minister of Industry;
Minister of Agriculture and Agri-Food;
Minister of the Environment;
Minister of Fisheries and Oceans;
Minister of Health;
Minister for International Trade;
Minister of Natural Resources.

?? Send copies to the Minister for the Status of Women. Ask that gender issues in biotechnology be addressed.

For an up-to-date list of cabinet ministers check the parliamentary web site at www.parl.gc.ca or phone the House of Commons information line at (613) 992-4793. (Address: House of Commons, Ottawa, Ontario, K1A 0A6. Letters to MPs, including cabinet ministers, are postage-free)

?? Contact the Canadian Biotechnology Advisory Committee to provide feedback on the documents they are developing and demand that the committee pressure the Ministers to ensure that Parliamentary hearings are held on the issue of biotechnology. (In 2001-02, the Committee is examining regulating genetically modified foods, patenting higher life forms and genetic privacy).

Canadian Biotechnology Advisory Committee
Industry Canada, 7th floor, Room 744-B, 235 Queen Street, Ottawa, Ontario, K1A 0H5
Fax: (613) 941-5533
www.cbac-cccb.gc.ca

?? Provinces/Territories may also be involved in biotechnology, e.g. through research and development grants to business and promoting biotechnology in agriculture. Find out what your province is doing and make your views known.

?? At election time, ask all candidates for local, provincial and federal office where they stand on biotechnology and what actions they will take when in office to protect human health, human rights and the environment.

Note:

Many groups listed below as well as major reports (Royal Society of Canada, 2001) have clear recommendations for the federal government, which others can refer to. For example*:* Women of the National Farmers Union are insisting on better regulations and labelling for genetically-engineered foods to ensure safety. The Sierra Club has detailed suggestions that can be viewed, along with the federal government's response at www.cfia-acia.agr.ca/english/ppc/biotech/enviro/sierrae.shtml

Media

?? Write letters to the editor, or broadcaster, responding to articles and letting them know you would like to see balanced coverage of biotechnology issues.

?? If you know journalists sympathetic to a critical perspective on these issues, send them information and updates. Encourage them to cover events and activities that promote an

alternative vision.

?? If you have the expertise, write (on your own or with others) an op-ed piece or article for your local media.

Consumer and Corporate action

?? Be a careful consumer – ask about genetically-modified foods and products. Talk to your local store managers and clerks about your concerns.

?? Support organic farming as a positive, sustainable alternative to GM foods. Ask for it at your local grocers and food chain stores. Demand that government support and subsidize organic farmers the way it does farmers who grow GM crops.

?? Write to the distributors and manufacturers of products/foods you buy to ask about their policy concerning genetically modified ingredients, and to express your concerns. Information pickets of grocery stores, and organized boycotts have sometimes been effective demonstrations of consumer power. For information and materials, contact the Sierra Club, listed in the appendix.

?? Examine your mutual funds and stocks, and those of groups you are a member of, to assess whether the corporate practices are in the public interest. As a shareholder, explore ways to influence company policies. Are you providing capital to industries and organizations you don't want to support?

APPENDIX

GUIDE TO THE GROUPS: WEB SITES OF KEY ORGANIZATIONS IN BIOTECHNOLOGY ACTIVISM

For an annotated version of this guide, see the Biotechnology and Women's Health website, hosted by the CWHN at: www.cwhn.ca

Canadian Organizations

Ag Biotech Infonet
www.biotech-info.net

Canadian Council for International Co-operation
www.web.net/ccic-ccci
www.incommon.web.net

Canadian Environmental Law Association
www.cela.ca

Canadian Health Coalition
www.healthcoalition.ca

Canadian Women's Health Network
www.cwhn.ca

Council of Canadians
www.canadians.org

The David Suzuki Foundation
www.davidsuzuki.org

Genetic Engineering Alert (GE Alert)
www.canadians.org/ge-alert/ge-alert.html

Greenpeace Canada
www.greenpeacecanada.org

National Farmer's Union
www.nfu.ca

Sierra Club of Canada
www.sierraclub.ca

International Organizations[3]

A SEED Europe
www.aseed.net

[3] Most of the organizations listed here are from a valuable resource: The Turning Point Project (www.turnpoint.org/gecoalorgs.html) that lists community organizations active in genetic engineering/biotechnology issues among other resources.

Alliance for Bio-integrity
www.bio-integrity.org

Campaign for Responsible Transplantation
www.crt-online.org

Center for Ethics and Toxics
www.cetos.org

Center for Food Safety
www.centreforfoodsaftey.org

Consumer's Choice Council
www.consumerscouncil.org

Council for Responsible Genetics
www.gene-watch.org

Earth Island Institute
www.earthisland.org

Edmonds Institute
www.edmonds-institute.org

Food First / Institute for Food & Development Policy
www.foodfirst.org

Foundation on Economic Trends
www.biotechcentury.org

Friends of the Earth
www.foe.org

Genetic Engineering Network
www.dmac.co.uk/gen.html

Greenpeace International
www.greenpeace.org

Institute for Agriculture & Trade Policy
www.iatp.org

International Center for Technology Assessment
www.icta.org

International Forum on Food and Agriculture
www.iffa.org

International Forum on Globalization
www.ifg.org

International Society for Ecology and Culture
www.isec.org.uk

Organic Consumers Association
www.purefood.org

Pesticide Action Network North America
www.panna.org

Rural Advancement Foundation International
www.rafi.org

Third World Network
www.twnside.org.sg

Union of Concerned Scientists
www.ucsusa.org

UBINIG (Policy Research for Development Alternatives)
ubinig@citechco.net

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