PSRG

Physicians and Scientists for Responsible Genetics [New Zealand]

affiliated to the international Physicians and Scientists for Responsible Application of Science and Technology

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The Councillors of all
Regional, District and City Councils in New Zealand

Dear Sirs and Mesdames

DRAFT LONG TERM COUNCIL CUMMUNITY PLANS (2006)

PSRG affirms the majority public concern about genetically engineered organisms (GEOs) being released into the environment. Notwithstanding claims of the adequacy of national-level regulation under the HSNO Act, we maintain that in the interests of local democracy, Councils have a responsibility to their region –

- to protect their ratepayers from having to bear the costs of unexpected damage caused by the release of GEOs approved by ERMA, costs which are effectively 'socialised' under the HSNO Act on the public purse and ratepayers at national or local levels.
- to protect GE-free production, and
- to protect human health, and New Zealand's biosecurity and unique biodiversity.

We ask that you consider the following as well as the attached documents in any long term plans. (N.B. for the purposes of this letter, genetic engineering and genetic modification are synonymous.)

PSRG believes that a precautionary approach is essential towards GEOs and to keep GEO land use out of the Council's area. We commend the Northland peninsula authorities and urge you to review the reports they recently commissioned, which indicated protective measure options for ratepayers (refer Appendix 1). These included:

- Making GEO land use a prohibited/restricted activity
- Requiring notification to Council of any proposed GEO land use and the payment of a bond for clean-up/compensation
- Having a mandatory inclusion on LIMS reports of GEO use on a site to protect future users of that land.

PSRG maintains that scientific evidence shows that there should be no releases of GEOs into the environment, and that an approval by ERMA for release may well expose local communities to undesirable hazards, outcomes and costs in ways which ERMA is not set up to prevent at the local level. We attach examples of recent studies that confirm the risks of release (Appendix 2).

We ask that you consider adopting the decision made by Whangarei District Council: "Council will adopt a precautionary approach to the management of biotechnology in general and to GMO land uses in particular. It will continue to investigate ways of maintaining the district's environment free of GMOs until outstanding issues such as liability, economic costs and benefits, environmental risks, and cultural effects are resolved." (p. 64, Whangarei District Council adopted LTCCP.)

Under current New Zealand law the costs of damage resulting from an officially approved GEO may fall on the local community. The Environmental Risk Management Authority, which applies the Hazardous Substances and New Organisms Act, admits that once it officially approves a GEO, as long as the user does as directed the costs of accidental damage are likely to become a socialized risk and fall to the public purse.

New Zealand does not have a national strict liability or bond-system in place to ensure that the cost of damage can be covered, thus exposing local communities to the costs. Here, we can learn from what is happening overseas. In Europe more than 3000 regional and local authorities have taken action to protect GE-free production in their area or declare GE-free Zones. Germany and Denmark have introduced bonds payable by farmers needing compensation to clean up GE contamination.

A coalition of Northland peninsula councils funded major reports that signalled the importance of local and regional authorities taking action to protect ratepayers from costs arising from damage caused by GEOs. PSRG asks that you please table these reports for your Council.

The Waikato District Council also recently received a report from its Planners that risks from GEOs "could be serious and long lasting or irreversible," that there is "a risk that Councils may face environmental clean up costs" and offering the option that, "a high level of financial accountability by GMO users for ecological damage could be achieved through the use of well framed RMA consent conditions."

We draw Councils' attention to the following:

1. We already have examples of where GEO trials in New Zealand have resulted in potential costs to local ratepayers or long-term impact on land use: e.g. 3000 genetically engineered sheep had to be slaughtered near Whakamaru when the biotech company running the project (PPL Therapeutics) went into liquidation. There has been no subsequent monitoring of the soil where these animals were grazed and there are reportedly no funds to test the site. A similar question has arisen with transgenic animals being trialled at Ruakura in Hamilton.

2. In Northland, the HortResearch trial of GE tamarillos was found to have been inadequately contained. The 2000/2001 Royal Commission on Genetic Modification found that the public concern was justified and stated that all transgenic material at the site should be cleaned up. To date, this has not occurred.

3. There is potential for contamination to occur naturally and out of our control. For example:

   a. In 2004, a flood washed away an onion crop (The *Listener* 6-12 March 2004). These were not genetically engineered. However, New Zealand is trialling genetically engineered onions and in a flood situation we would have no control over how far such a crop would travel and thus potentially contaminate other crops. Onions are NZ's fourth largest export crop and a not insignificant portion is produced organically. Our customers want GE-free produce.
   b. A report in the *Hawkes Bay Times* (October 2003) described how an experienced pilot, flying "in a thermal at 7000 feet altitude over a corn field that was being harvested" was "surrounded by corn husks that were being sucked up by the thermal." Pine pollen has been shown to travel at least 600 km from the closest pine trees (Singh et al., 1993), and a storm can lift air masses, and thus pollen grains, skywards several kilometres and carry that pollen for hundreds of kilometres (Emberlin et al; Mandrioli et al., 1984; Faegri & Iversen, 1989).

4. It has been indicated that land values overseas have fallen because of the use of GEOs at certain growing/trial sites. This has been highlighted in at least one site used for GEO field trials in the UK.

5. We can take heed of the Insurance Council of Australia, which has warned that the food industry could face "asbestos-like" lawsuits over GEOs in the future. Insurance companies generally will not insure clients for GEO contamination.

6. The rulings of the US Food and Drug Administration is relied upon largely for decisions made by most of nations' regulatory authorities, including New Zealand. The FDA has admitted that effects that were not foreseen or planned occur in genetically engineered plants "at frequencies up to 30 percent" and that "some undesirable effects such as increased levels of known naturally occurring toxicants may escape breeders' attention."

PSRG asks Councils to take the socially responsible step to put safety before industry profit and protect its residents from the potential risks of GEOs.

The Trustees of PSRG would appreciate receiving an acknowledgement of receipt of this communication and a statement of Council's position on the release of genetically engineered organisms. We would also appreciate having periodic reports on any changes to Council's position. Thank you.

We look forward to hearing from you.

Signed on behalf of the Trustees of PSRG

Jean Anderson

Jean Anderson - Secretary

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Ends

Commercial pressure may further risk our unique flora. Almost 50 percent of cut timber goes into paper production, half of that for packaging, and junk mail using another large portion. Demand has depleted supplies. Free trade agreements and increased consumption have encouraged the wood pulp industry and the biotechnology industry to work together, and has led to claims that engineered trees grown for wood pulp are the answer to environmental concerns such as forest decline, pollution from paper mills, and the use of chemicals in forestry plantations.

6. Terminator technology

Of particular concern is New Zealand's support for the development of terminator technology. Plants are complex organisms, genes inter-relate to express different traits, activated and deactivated at various times in a plant's life due to external and internal stresses.

In respect of trees, the probability of a permanently sterile tree is practically zero and under unusual conditions - e.g., where a mate is not available - organisms have been known to compensate. For example:

6.a. German field trials of transgenic aspens, engineered to be sterile, were approved for a five-year period on the understanding that aspens typically flower around year seven, but the aspens began to flower after only three years.[11]

Scientists' knowledge of the complex inter-relationships of trees and under-story plants, insects, animals, fungi, bacteria and soil micro-organisms is only just developing. There is concern, for example, about using engineered exotic species that may become invasive and displace native species.

Trees are not an annual crop. They live hundreds of years, exposed to many stresses such as frost, fire, drought, storm and insect attacks. No risk assessment can predict the interference that genetic engineering will have on the stress response and the aging of trees.

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7. 'Cry1Ab-resistance pattern on Indian meal moth,' Béla Darvas & Éva Lauber, Hungarian Academy of Sciences, Plant Protection Institute, Department of Ecotoxicology and Environmental Analysis, Budapest.

3.d. A study (Darvas et al)[6] carried out over several years looked at the possible effects of the pollen of DK-440 BTY corn grown in Nagykovácsi, Júlia-major, a valley where no maize was grown during the years concerned. The distance of the intra-specific hybrid formation was examined on white, tassel-free maize and the results showed that pollen transfer could occur at 800 metres. This poses risks for organically grown maize where zero tolerance is accepted for GE-hybrids. Seeds developing from a traditional female blossom pollinated with cry gene- containing pollen (i.e., from MON 810), have a high probability (1/3) of acquiring the capability of producing the Cry1Ab toxin.

3.e. Around fields planted with Bt-corn hybrids, the Bt-pollen settled on weeds, presenting a danger to the hatching caterpillars of protected varieties of butterflies. This means that in the case of extensive Bt-corn cultivation, butterfly species could recede. A study by Béla Darvas and Éva Lauber[7] found that insects developed resistance to the toxin content in Bt-corn leaves. The conclusion is that this will generate a growth in the number of insect populations on which Bacillus thuringiensis products – used almost exclusively in organic farming – will no longer have a suitable effect.

4. Non-food products produced using food crops

There is especial concern about food crops engineered to produce pharmaceutical and industrial non-food products. There is potential for contamination of other engineered, conventional and organically grown crops,[1] and for these non-food products to enter the food chain as did the Cry9C protein in StarLink corn in 2000.

In 2004, the US Department of Agriculture oversaw 67,000 acres of biotech field trials, some of which involved producing non-food products in a food crop. Corn is the most utilised food crop for engineered traits because it is easy to work with and produces a lot of grain.

(N.B. Some people react differently to proteins that are genetically engineered as against equivalent proteins that are produced naturally. For example, GE technology is not as precise or as predictable as producing drugs chemically. Even the subtlest of changes in the process can have unpredictable results.)

5. GE trees may potentially contaminate natural forests.[8, 9, 10]

A study identified pine tree pollen at 600 km from the closest pine trees (Singh et al., 1993), and another showed that a storm can lift air masses, and thus pollen grains, skywards several kilometres and carry that pollen for hundreds of kilometres (Emberlin et al; Mandrioli et al., 1984; Faegri & Iversen, 1989). The danger arises for contamination at great distances from trees engineered to grow faster, to contain less lignin, to have more uniform characteristics, be resistant to agri-chemicals or contain their own pesticide, for tolerance to salt, cold, wet and drought, and to be more resistant to disease; also from trees engineered for so-called phytoremediation, taking toxic waste from the environment, for example, engineered yellow poplars which possess a "merA" gene that can grow in an environment of normally toxic levels of ionic mercury.

The risks are multiplied by trees engineered with multiple traits, called gene stacking, which create additional complex and unpredictable effects. Dr Ricarda Steinbrecher, a geneticist, describes some of the potential complications of gene stacking. "While 'simple' traits such as herbicide resistance or insecticide production already interfere with the plant's own internal biochemical pathways and gene regulation, creating unpredictable side effects, this is likely to be exacerbated for complex traits."

2. Health concerns for genetically engineered crops

It has been claimed that some crops will only be used in animal feed. However, it has been shown that these can find their way into human food products. PSRG maintains that it is intrinsically unwise to allow GE animal feed into the human food chain. For example:

2.a. In June 2004, a study was released by the Research Centre for Milk and Foodstuffs in Weihenstephan, Bavaria that showed that parts of the gene construct from RoundupReady soybean and from Bt176 maize was found in milk from cows fed these genetically engineered plants. The report says the gene segments may have got into the milk via feed or dust from the feed in the air. No further studies have been made to clarify the exact means by which the DNA fragments got into the milk.[3]

2.b. A study commissioned by the UK Food Standards Agency[4] (FSA) and carried out at the University of Newcastle, demonstrated that DNA from a genetically engineered food – in this case soybean in the form of a burger and a milkshake - found its way into the gut bacteria of human volunteers.

The long-term effects of ingesting material from transgenic sources on a daily basis have not been assessed. With contamination a proven risk, control over ingestion may not be an option.

3. Studies on Monsanto's MON 810 GE corn[5, 6, 7]

Monsanto's MON 810 corn produces an artificial, truncated version of a Cry toxin derived from the bacterium *Bacillus thuringiensis*. This family of toxins has a pathogenic effect on insects.

3.a. A study spanning several years has monitored the quantity of Cry1Ab toxins in DK-440 BTY (MON 810) corn. Cry toxins are compounds that have gained acceptance in pest control (i.e., in bio pesticides such as DIPEL). However, genetically engineered plants are not equivalent to these bio-pesticides from the aspect of environmental analysis and ecotoxicology. The principal difference with regard to toxin release is related to the extent and duration of exposure: while bio-pesticide applications release a small quantity of the toxin on a single or several occasions, the GE plant produces the toxin protein on a continuous basis, unnecessarily, during its entire vegetation cycle, as long as the gene section(s) added artificially to the plant and responsible for encoding the protein are active.[5]

3.b. Székács et al[5] have confirmed that the Cry toxin is produced in the plant during the whole period of growth. That is, in a dry plant, under moderate temperature, the toxin remains biologically active for several years. Post-harvest the maize stubble contains a significant quantity of Cry toxin. Cry toxin, over-wintering in the stubble, can be detected in plant residues after a period of one year.

3.c. Székács et al[5] compared the quantity of Cry-toxin proteins produced by the Bt-plant with the doses registered and permitted for their use in bio pesticides, and determined the toxin quantity in DIPEL. They found that MON 810 Bt-corn produces 1800-3000 times more Cry1Ab toxin than the Cry1Ab toxin dose corresponding to a single treatment with DIPEL. They also found that only part of the toxin from the Bt-plant is decomposed during the growth period. Further, a significant part of the remaining quantity in the stubble enters the soil, where it may affect soil life (animals and micro-organisms).

Appendix 2

PSRG calls your attention to the following material that qualifies the public's concern about genetically engineered organisms (GEOs). The risks of growing GE crops potentially endanger the environment and human health.

1. Regulation, safety testing and monitoring of GEOs

New Zealand largely relies on the approval process of US government agencies. This reliance raises concerns because the companies that develop and promote GE food crops generally (a) carry out toxicological studies on the effects of consuming them and (b) often claim that their crop will not contaminate crops grown nearby. Industry studies are meant to be double checked by regulators, but the criticism is that the experiments are simply not reproduced, even though industry studies often show adverse biological and environmental impacts. For example:

1.a. The FDA declared that GE foods are substantially equivalent to conventional foods. It ignored the warnings of its own scientists and put in place food rules that assume no unforeseen effects will occur and, therefore, no safety testing is required, for genetically engineered foods. This premise has been well proven to be wrong.

1.b. Early in 2000, German scientists discovered that antibiotic resistant marker (ARM) genes from engineered canola were transferring their resistance to the bacteria found in the guts of bees that had consumed pollen from the plants.

Earlier European Union studies had revealed that ARM genes found in genetically engineered foods could transfer into bacteria in the human gut as well as soil bacteria (www.organicconsumers.org/ge/genemarker.cfm).

Concerns were raised as long ago as 1999 when the British Medical Association called for a global moratorium on GE crops. The BMA were concerned that ARM genes would cause antibiotic resistance to develop in bacteria by horizontal gene transfer. Such resistance would serve to erode the effectiveness of antibiotics for humankind. Crops are still produced using ARM genes.

1.c. A recent report found that the US Department of Agriculture has failed to properly oversee field trials of GE crops, including plants engineered to produce chemicals for medical and industrial uses. The report says that the USDA "lacks basic information" on field trial locations and what happens to the crops after harvest. For example, auditors located two harvested pharmaceutical crops in storage, about which the USDA knew nothing nor had it approved. The two-year safety audit by the United States Office of Inspector General[1] also found that: "Current (USDA) regulations, policies and procedures do not go far enough to ensure the safe introduction of agricultural biotechnology."

In 2006, agricultural economist, Dr Charles Benbrook - a former advisor to the Carter, Reagan and Clinton administrations - warned of serious concerns over safety in respect of generically engineered foods.[2] He claims that these food crops should be re-tested using Australian food safety technology developed by the Australian National University. The failed pea trials were tested using it

To the Councils of New Zealand
Physicians and Scientists for Responsible Genetics

18 April 2006

Appendix 1 – Guidelines to Councils' decisions

Council may be guided by the actions that the Northland peninsula councils have already undertaken:

GEO policies have been adopted by local government in Adopted LTCCP's. Northern Regional Council: Adopted Long Term Council Community Plan- content* P. 41 LTCCP.

"The Regional Council is a member of a Northland inter-council working group to discuss a common approach to the management of genetically modified organisms in Northland. Until this group has completed its work, the council has decided to adopt a precautionary approach. This means that there should be no further development and field testing of transgenic organisms envisaged for agriculture, horticulture and forestry in Northland, nor any commercial release, until the risk potential has been adequately identified and evaluated and a strict liability regime put in place."

P42 LTCCP Priorities for Indigenous Biodiversity Supporting Agency to participate in a Northland inter-council working group to discuss a common approach to the management of GMOs in Northland and supporting agency to support a precautionary approach to GE by the Environmental Risk Management Authority (ERMA).

P43 LTCCP Measuring Progress No GE applications approved by ERMA for Northland until the risk potential has been adequately identified and evaluated, and a strict liability regime put in place.

"Council will adopt a precautionary approach to the management of biotechnology in general and to GMO land uses in particular. It will continue to investigate ways of maintaining the district's environment free of GMOs until outstanding issues such as liability, economic costs and benefits, environmental risks, and cultural effects are resolved."

(p. 64,Whangarei District Council adopted LTCCP)

"Support precautionary approach towards GE" Community Priority under the Theme of "Kaipara District's special character and healthy environment."

(p. 88, Kaipara District Council adopted LTCCP)

Appendix ends/