GM Contamination Register

www.gmcontaminationregister.org

GeneWatch UK GREENPEACE

EXECUTIVE SUMMARY

GM Contamination Report 2005

A review of cases of contamination, illegal planting and negative side effects of genetically modified organisms

GeneWatch UK

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GeneWatch UK and Greenpeace International

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1 Executive summary

This report is the first from the on-line GM Contamination Register (www.gmcontaminationregister.org) and reviews cases reported in the public and scientific literature of contamination, illegal plantings and releases of GM organisms, and negative agricultural side-effects since GM crops were first grown commercially on a large scale in 1996. This represents a sample of the actual cases of GM contamination that have taken place, many of which are not detected or not revealed because they are part of food producers quality control systems.

This report also includes a special review of the Syngenta Bt10 GM maize contamination incident that took place in 2005, affecting the USA, Europe and Japan and probably many other countries importing maize from the USA. It considers the scope and causes of all the incidents, to make recommendations for action.

There are 113 incidents included in the register: 88 cases of contamination, 17 illegal releases and eight reports of negative agricultural side-effects. For 2005, this includes seven cases of contamination, eight illegal releases and three cases of negative agricultural side-effects.

A total of 39 countries on five continents are known to have been affected by an incident of GM contamination, illegal planting or adverse agricultural side-effect since 1996. This is almost twice the number of countries that grow GM crops. The USA has had almost twice the number (19) of contamination and other incidents compared to any other country over the first ten years of growing GM crops. This is likely to reflect the high acreage of GM crops grown there. The UK has the second largest number of reported incidents (ten) even though it grows no GM crops commercially. The high detection rate in the UK is likely to reflect the increased scrutiny of GM crops that has taken place there and the greater efforts to detect contamination. It may also serve as an indicator for the total number of cases in countries with similar conditions had they applied the same level of scrutiny.

In 2005, 11 countries and Europe as a whole were affected by a contamination incident, illegal release or report of a negative agricultural side-effect: USA (two); Australia (four); Brazil (one); Germany (one); New Zealand (one); Japan (one); Romania (three); India (one); Ireland (one); China (one); Serbia (one); and Europe (one).

Over 90% of the 113 incidents were associated with the four major GM crops grown commercially: maize (35%); soybean (23%); oilseed rape (18%); and cotton (9%). The incidents involving other GM organisms, except for GM papaya which is grown commercially in Hawaii, involved illegal releases (grass, plum, potato, rice), contamination of a GM crop to be used in field trials (sugar beet) or arose from poor record keeping or ‘mistakes’ (pig, tomato and zucchini). In 2005, GM maize was associated with five incidents; soybean, four; oilseed rape, three; and cotton, plum, potato, zucchini and rice, one each.

Although the majority of contamination cases are not fully investigated, cross-pollination appears to be the major cause in the majority of seed contamination incidents. With food, feed and seed contamination, poor quality control and failure of post-harvest segregation also play an important role.

There are 17 illegal releases included in the register which are associated with research and development or black-market growing (in India, Brazil and Romania). Mistakes and errors in handling are one

apparently common cause of illegal releases associated with research and development. Failures in inspection and enforcement of controls on field trials have also been highlighted in a 2005 USDA review of its own systems.

Eight reported and verified cases of adverse agricultural side-effects have been reported with GM crops, affecting the USA, Argentina, Canada and Australia. These include the emergence of herbicide-tolerant weeds in the USA and Argentina, unreliable performance of Bt cotton in India, and the first field case in Australia of cotton bollworm resistance to a toxin, Cry1Ac, used in GM cotton.

The data from the GM Contamination Register show that GM contamination can arise at every stage of development – from the laboratory, to the field, to the plate. Cases of misidentification, poor quality control and lack of awareness of proper controls in laboratories have led to GM tomato, zucchini and maize seed being distributed around the world and meat from GM pigs entering the food chain. Seed used for GM field trials, even the high-profile scientific farm-scale evaluations in the UK, has been found to be contaminated by other GM crops. Experimental trials have led to contamination of neighbouring and subsequent crops. Cross-pollination and poor quality control have led to non-GM seed and food aid being contaminated. Illegal large-scale growing of GM crops in Brazil, India and Romania, together with scientists conducting illegal trials or failing to contain them properly, show that GM organisms are often out-of-control even when claimed to be ‘strictly contained’.

The Bt10 maize contamination incident in 2005 reveals a particular problem with detection and prevention of GM contamination. In official terms, this GM maize did not exist. It had not been tested in field trials, so no details had to be disclosed to authorities to gain authorisation. Even if it had been used in trials, it is unlikely that information about the construct and genes inserted would have been in the public domain, as this is often deemed ‘confidential business information’. This has become standard practice only over the past years. At the same time an increasing array of potentially dangerous genes with respect to human health are being introduced into crops – coding for drugs or other biologically active compounds – that could easily escape detection. Poor controls of trials with such GM drug producing crops were also highlighted by the USDA.

The main conclusions from this first review of the GM Contamination Register are:

- Present controls on GM organisms from the laboratory to the field are ineffective and prone to failure.
- Countries and companies are often unable to prevent illegal sales of GM crops.
- No control system is totally foolproof, human error will always result in accidents.
- There are no independent systems in place to detect and investigate contamination, illegal releases and negative side-effects of GM organisms. National, international and corporate structures are inadequate and thus probably the majority of GM contamination incidents are undetected and certainly only a fraction of detected cases is published.
- Countries are not full filling their obligations under the Cartagena Protocol on Biosafety to inform the Clearing House of illegal transboundary movements of GMOs.
- Potentially dangerous genes could be introduced into the food chain and the environment as a result of the poor controls and lack of information because of claims to commercial confidentiality.
- The economic costs of contamination and other incidents have been, and are likely to continue to be, high in the future. Health, environmental and social costs are potentially immense.

GeneWatch UK and Greenpeace consider that these findings require:

- An independent, international commission should be established to investigate GM contamination and implement measures to reverse it.
- A global and publicly available register of cases of contamination, illegal releases and negative agricultural side-effects should be established and maintained within the framework of the Cartagena Protocol on Biosafety (CPB).
- Parties to the Protocol must ensure that the CPB Clearing House is fully informed about illegal transboundary movements of GMOs.
- International standards for the identification and documentation of transboundary shipments of GMOs must be urgently established and enforced.
- The public interest must outweigh commercial confidentiality issues.
- Event specific detection methods for GMOs must be a pre-requisite for field trials and commercialisation and be made publicly available in any case of potential escape.
- Imports of seed from high-risk, GM growing countries should be targeted for routine tests and investigation.
- Involvement in intentional illegal releases of GMOs or lack of co-operation in their prevention and management should forfeit a company's right to commercialise GM products
- Firm action from authorities must follow when an illegal act takes place. Without substantial and predictable sanctions, sloppy practice and complacency are likely to be encouraged.
- As a matter of product stewardship, companies should be obliged to keep records of the global dissemination of their products and GMO events
- National and international rules must be introduced to provide strict liability for environmental, health or economic damage that arises from GM contamination and illegal growing. The biotechnology company producing the GM organism responsible should be considered liable unless it can demonstrate negligence by another party.
- Biotechnology companies, their insurers and investment companies should review the potential liabilities of GM organism development and sales and disclose these liabilities fully in their financial reporting.
- Approvals and releases of GM organisms to be stopped under present conditions.

Full report is available from Greenpeace International and GeneWatch UK

www.greenpeace.org/bsp2006

www.gmcontaminationregister.org

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Table 2: All incidents according to country 1996–2005
(NB. Percentages are rounded so do not total 100%)

Country \ Year	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	TOTAL	% of total
USA		1		2	2	2	3	2	5	2	**19**	17%
UK				1	3	1	3	1	1		**10**	9%
Australia					1		2	2		4	**9**	8%
Canada		1	1		1	1	3	1	1		**9**	8%
France					2	3	1				**6**	5%
Germany			1		2				1	1	**5**	4%
New Zealand					1		1	1	1	1	**5**	4%
Brazil			1						2	1	**4**	4%
India						2				1	**3**	3%
Japan					1				1	1	**3**	3%
Romania										3	**3**	3%
Argentina						1			1		**2**	2%
Bolivia						1	1				**2**	2%
Croatia		1							1		**2**	2%
Denmark					1				1		**2**	2%
Ireland							1			1	**2**	2%
Netherlands					1				1		**2**	2%
Switzerland				1			1				**2**	2%
Thailand				1					1		**2**	2%
Austria						1					**1**	1%
Chile									1		**1**	1%
China										1	**1**	1%
Columbia						1					**1**	1%
Egypt					1						**1**	1%
Equador						1					**1**	1%
Greece					1						**1**	1%
Guatamala									1		**1**	1%
Italy								1			**1**	1%
Mexico						1					**1**	1%
Nicaragua							1				**1**	1%
Peru						1					**1**	1%
Philippines						1					**1**	1%
Poland						1					**1**	1%
Russia				1							**1**	1%
Serbia										1	**1**	1%
South Korea					1						**1**	1%
Spain								1			**1**	1%
Sweden					1						**1**	1%
Taiwan								1			**1**	1%
Europe										1	**1**	1%
TOTAL	**0**	**3**	**3**	**6**	**19**	**18**	**17**	**10**	**19**	**18**	**113**	100%
	0%	3%	3%	5%	17%	16%	15%	9%	17%	16%	**100%**	

Table 1: Categories of reported incidents 1996–2005

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	**TOTAL**
Contamination	0	1	1	3	19	16	17	9	15	7	**88**
Illegal releases	0	1	1	1	0	2	0	1	3	8	**17**
Negative agricultural side-effects	0	1	1	2	0	0	0	0	1	3	**8**
All	0	3	3	6	19	18	17	10	19	18	**113**

Table 3: Contamination register incidents by organism and year
(NB. Percentages are rounded so do not total 100%)

	1996	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**TOTAL**
Maize		1	1	2	8	6	6	5	5	5	39 (35%)
Soybean			1	3	1	8	4		5	4	26 (23%)
Oilseed rape/canola		1	1		4	2	4	2	3	3	20 (18%)
Cotton		1		1	2	1	2		1	2	10 (9%)
Papaya								1	3		4 (4%)
Pigs						1	1	1	1		4 (4%)
Sugar beet					4						4 (4%)
Grass									1		1 (1%)
Plum										1	1 (1%)
Potato										1	1 (1%)
Rice										1	1 (1%)
Tomato								1			1 (1%)
Zucchini										1	1 (1%)
TOTAL	0	3	3	6	19	18	17	10	19	18	113