INTERNATIONAL CENTRE FOR GENETIC ENGINEERING AND BIOTECHNOLOGY (ICGEB)

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The forthcoming entry into force of the Cartagena Protocol on Biosafety (adopted in 2000 by the Conference of the Parties to the Convention on Biological Diversity) is shaping the activities on biosafety implemented by Governments, international agencies and biotechnology stakeholders. Accordingly, there is an increased interest in acquiring specific scientific expertise in this area, which has led to formal requests for access to information and capacity-building activities offered by the ICGEB and for extending its cooperation with other international organizations involved in this subject.

In 1997, the ICGEB established a Biosafety Unit within the Directorate to provide institutional services related to genetically-modified organisms (GMOs) and their environmental release to Member States. The Unit is involved in three major sectors, namely: (i) information dissemination and the establishment of a biosafety clearing-house; (ii) scientific training in risk assessment for the environmental release of GMOs (capacity building and technology transfer), and (iii) international cooperation with other international agencies involved in biosafety.

The following is a brief update of the activities implemented by the Biosafety Unit over the past year, as well as the outlook for possible new programmes that may involve ICGEB and its constituency in the future.

Dissemination of information (biosafety clearing-house)

The Biosafety Web Page (http://www.icgeb.org/biosafety), a functional portal through which all the information currently available on the subject of biosafety is accessible, with four main sections: the "Biosafety Database", the “Library”, the “Links” and the ”Risk Assessment Searching Mechanism (RASM)", are continually updated.

The “Biosafety Database” (http://www.icgeb.org/biosafety/bsfdata1.htm) contains approximately 3,800 scientific articles (full references and abstracts), published in international, peer-reviewed, scientific journals since 1990. These are selected and classified by ICGEB scientists according to specific topics that could raise concern for the environmental release of GMOs (see Table 1). By virtue of an Agreement entered into with the Secretariat of the Convention on Biological Diversity, and after defining a set of criteria to guarantee the interoperability between the two information systems, the ICGEB Bibliographic Database can now be accessed directly from the Biosafety Clearing-House (BCH), hosted on the Web pages of the Convention on Biological Diversity.

The “Library” (http://www.icgeb.org/biosafety/bsflib.htm) and the “Links” (http://www.icgcb.org/biosafety/bsflinks.htm) provide access to all official documents issued by major international organizations operating in this field, as well as access to national and international Websites related to biosafety.

The Risk Assessment Searching Mechanism (RASM) (www.icgeb.org/biosafety/rasm.html) developed by the ICGEB with the support of the Italian Ministry for the Environment, has been established as a tool for the decision-making process according to Article 10 of the Cartagena Protocol, and takes into account: (i) the needs of the Parties to the Protocol for risk assessment information on the intentional introduction of GMOs

into the environment; and (ii) the need for information-sharing decisions on the BCH, according to Article 10 of the Protocol (AIA). It provides access to an index of the existing risk assessment documents related to official governmental decisions for the release of GMOs, in accordance with the UNEP International Technical Guidelines for Safety in Biotechnology.

The pilot version of this new tool, which has been available on-line since March 2002, contains 213 records of risk assessment documents, relating to 77 different transgenic events from 14 plant species, issued by nine official authorities from several countries (see Tables 2 and 3). Currently, RASM is offered on a voluntary basis through the ICGEB Web pages while its potential use is evaluated by the Parties to the Cartagena Protocol and the Secretariat of the Convention on Biological Diversity. RASM has been presented at the meetings of the ICCP as an additional tool to be included in the Biosafety Clearing-House. Tools facilitating access to the latest official risk assessment documents ("Last updates"), as well as statistical data on the records contained in RASM ("Statistics"), have also recently been made available. Apart from ensuring easier access to reliable information on risk assessment, RASM might play a role in data maintenance, such as the temporary storage of data not yet available on the Web due to the lack of electronic infrastructure in some countries where the concerned bodies still do not possess their own Web sites. In this regard, the ICGEB Board of Governors has recently recommended that all Member States take full advantage of this facility and provide concrete inputs of any available information on risk assessment implemented within their national context.

Tables:

Table 1: ICGEB Biosafety Database: records as at 30 June 2003. Total authors: 7,322; Total descriptors: 5,991; Total articles: 3,821;
Count of records per year and per category of risk.

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	TOT
Animal and human health	10	46	40	57	116	73	88	54	33	50	96	160	157	29	1010
Environment	31	55	63	73	140	99	74	76	51	68	139	179	153	39	1240
Agriculture	9	39	42	79	130	108	133	53	41	60	108	109	98	18	1027
General concerns	52	120	98	151	137	89	76	119	107	116	199	273	260	42	1840
Interaction with non-target organisms	13	16	17	27	59	51	48	48	66	73	77	62	47	6	610
Genetically-modified microorganisms	33	56	52	73	128	75	84	45	29	11	24	37	28	5	680
Aquaculture		2	2	2	12	15	8	4	1	6	9	10	10	1	82

Table 2: ICGEB Risk Assessment Searching Mechanism (RASM): records as at 30 June 2003. Statistics (General): 213 records; eight countries (Australia, Bulgaria, Canada, European Union, New Zealand, Switzerland, United Kingdom, United States); nine national competent authorities.

	Plant Species (Common Name)	Number of varieties
	Chicory	1
	Cotton	5
	Flax	1
	Maize	22
	Oilseed rape	18
	Papaya	1

	Potato	7
	Rice	3
	Soybean	5
	Squash	2
	Sugar beet	3
	Tobacco	1
	Tomato	6
	Wheat	2
TOTAL		77

Table 3: ICGEB Risk Assessment Searching Mechanism (RASM): 213 records as at 30 June 2003. Statistics (Traits): Herbicide tolerance: 51%; Insect resistance: 29%; Male sterility: 7%; Virus and fungal resistance: 8%; Others: 5%.

Traits	Records
Bromoxynil herbicide tolerance	14
Coleopteran insect resistance	25
Cucumber mosaic virus (CMV) resistance	2
Fruit ripening altered	8
Fungal (Ustilago maydis) resistance	1
Glyphosate herbicide tolerance	44
Higher amylopectin starch content	2
Imidazolinone herbicide tolerance	9
Lepidopteran insect resistance	58
Male sterility	21
Oil profile altered	5
Papaya ring spot virus (PRSV) resistance	1
Phosphinothicin (Glufosinate ammonium) herbicide tolerance	78
Potato leaf roll virus (PLRV) resistance	9
Potato virus Y (PVY) resistance	3
Sethoxydim herbicide tolerance	1
Sulfonilurea herbicide tolerance	3
Watermelon virus 2 (WMV2) resistance	4
Zucchini yellow mosaic virus (ZYMV) resistance	4