

## Is India Ready for Genetically Modified Food?

The Supreme Court-appointed Technical Expert Committee (TEC) recently recommended an indefinite moratorium on the use of genetically modified (GM) food crops and their field trials in India, once again thrusting the issue into the national spotlight.<sup>1</sup>

Earlier this year, the central government had allowed the field trials of some GM plants in the agricultural sector in India.<sup>2</sup> The Genetic Engineering Appraisal Committee (GEAC), established under the Rules for the Manufacture, Use, Import, Export, and Storage of Hazardous Microorganisms/Genetically Engineered Organisms or Cells, 1989 (Hazardous Microorganisms Rules), had approved experimental field trials of a number of GM crops for the purpose of bio-safety research in India.<sup>3</sup> Of these approved crops, only transgenic cotton-, corn-, and mustard-focused field trials were initiated after obtaining a “no objection” from the relevant state governments. Other transgenic crops had awaited governmental consent. The Ministry of Environment & Forests (MoEF), however, subsequently decided to put these trials on hold in the wake of ongoing proceedings before the Supreme Court in a public interest case concerning the fate of GM food crops in India.<sup>4</sup>

In July, the TEC submitted its final report with the Supreme Court, wherein it specifically advised the Court that there should be an indefinite ban on field trials of GM crops in India until certain gaps in the regulatory regime are addressed. This is not the first time that an official report has raised concerns regarding the use of gene technology in grains, seeds, and other food products. Similar conclusions were reached in the MoEF’s report imposing an indefinite moratorium on Bt brinjal (a type of transgenic eggplant) in February 2010,<sup>5</sup> the Sopory Committee Report in August 2012,<sup>6</sup> and the Parliamentary Standing Committee (PSC) Report on GM crops in August 2012.<sup>7</sup>

The timing of the TEC report is particularly interesting, as the controversial Biotechnology Regulatory Authority of India Bill, 2013 (BRAI Bill) was introduced in April 2013 to the Lok Sabha, the lower house of Parliament. The bill was subsequently referred to a PSC for review and recommendations.

### Regulatory and Institutional Issues

There is a growing consensus that the GEAC in its present form cannot be the regulatory body responsible for shouldering the highly technical and complex task of regulating and managing gene technology. Various studies have highlighted the need for a more robust, specialized, and independent regulatory body with technical and scientific expertise on biotechnology.

The PSC, in its report on the cultivation of GM food crops, observed that the present regulatory system, consisting only of the GEAC, is inadequate. The PSC also noted that GEAC officials and members have other full-time jobs, raising concerns about how much support, time, and direction can be expected from committee members. The report also discussed the Hazardous Microorganisms Rules’ lack of clarity on whether the GEAC has complete authority to approve research on and the release of genetically modified organisms or whether it has only advisory functions in this regard. The PSC report highlighted major gaps in the current regulatory framework and the institutional governance in the field of gene technology in India.

The report on Bt brinjal prepared by the then-Minister of Environment & Forests, Jairam Ramesh, also raised serious concerns regarding the integrity and functioning of the GEAC. In imposing an indefinite moratorium on the release of Bt brinjal in India, the Minister had hoped that the period of moratorium would be used to operationalize an independent regulatory body.

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Similarly, the TEC was of the opinion that it is not sufficient to have a single committee, such as the GEAC or the Review Committee on Genetic Manipulation,<sup>8</sup> in charge of conducting all evaluations. It thus recommended area-specific subcommittees or expert groups in the areas of health, environment and ecology, biology, public health, agriculture, and others. It also recommended the establishment of a regulatory body, like a secretariat comprising scientists and other experts, in addition to international collaboration.<sup>9</sup>

All eyes are now set on the Biotechnology Regulatory Authority of India (BRAI), proposed under the BRAI Bill.<sup>10</sup> It is proposed that the BRAI will function under the aegis of the Ministry of Science and Technology (MST) and will have a mandate for regulating the research, transport, import, manufacture, and use of organisms and products of modern biotechnology in India. In addition to establishing the BRAI, the BRAI Bill also proposes the establishment of an interministerial governing board, two advisory bodies, and subject-specific regulatory agencies in the areas of agriculture, forest and fisheries, human health, veterinary products, and others.

An interministerial governing board would have representation from the MoEF, the Ministry of Agriculture (MoA), and the Ministry of Health and Family Welfare (MHFW)—but since the BRAI would essentially function under the MST, these other ministries will only have an advisory role in terms of the regulation and management of gene technology. This raises concerns that the decisions of the BRAI may be lopsided and fail to give sufficient consideration to issues on environment, agriculture, public health, and safety. In addition, as the MST has a mandate to promote modern biotechnology, there are concerns that an authority working under the MST would be driven by the MST's larger mandate and fail to fully address health and safety concerns.

It is not clear which authority will be dominant in matters concerning health and food. In its proposed form, the BRAI may regulate transgenic agricultural crops, but drugs covered under the Drugs and Cosmetics Act, 1940, or food or food additives covered under the Food Safety and Standards Act, 2006, are outside the purview of the BRAI. However, the BRAI Bill also proposes amendments to the Drugs and Cosmetics Act, 1940, and the Food Safety and Standards Act, 2006. These amendments suggest that genetically modified or engineered organisms that are approved as safe for human consumption by the BRAI may not be regulated under the former statutes.

While the government is contemplating the structure, composition, and mandate of the proposed regulatory body, it is critical to ensure that such a regulator works in tandem with all concerned authorities and government ministries. Transgenic crops, especially food crops, implicate several areas of concern, including agriculture, seeds, environment, health, science, and technology. Effective coordination of these areas is a must.

### **Whether to Use Gene Technology at All**

A question that crops up time and again before the Government of India is whether or not to introduce gene technology in food crops and products. Currently, the official view is divided between the MoA, which promotes GM crops as India's answer to food insecurity, and the MoEF, which recommends treading with caution.<sup>11</sup> Most states are also opposed to transgenic food crops.<sup>12</sup>

Recent technical studies conducted in India do not support the MoA's position. The TEC in its final report noted that Bt transgenics are not used anywhere in large amounts for any major food crop that is directly used for human consumption, and it found no compelling reasons for India to be the first country to do so. The TEC also recommended prohibiting the use of transgenic food crops in the country where the crop's origin or center of diversity is found. Similarly, the PSC, which dealt specifically with the question of cultivating GM food crops, was opposed to the use of modern gene technology in food production.

When Ramesh imposed a moratorium on the release of Bt brinjal in 2010, adopting a cautious and precautionary approach, independent scientific studies establishing the safety of the product and its impact on human health and environment were not available. Since then, there has not been any substantial change in this status. To date, there is little clear evidence establishing the absolute safety of transgenic crops and food.

There is thus no consensus on the matter. As the new regulatory framework is under consideration, it is prudent to wait until the new regulator comes into existence. India's need to increase food yield is not so dire as to warrant the use of controversial and questionable food technology.

### **The Role of State Governments**

Agriculture, including agricultural education and research, is governed by states. Thus, any decision regarding the introduction of transgenic crops in India involves state participation. Ramesh conducted nationwide debates on Bt brinjal in 2010 wherein the views of various state

governments were considered. The establishment of a national-level regulator with no involvement of state governments or lower-level government institutions would likely violate states' constitutional powers.

### Going Forward

It is imperative for India to clarify the purview of the regulatory body responsible for GM crops and products. This involves clearly delineating the composition and functions of the regulator, as well as the participation of various other institutional authorities in the research and development of gene technology. The role of states cannot be ignored. Although ensuring food security is important, the government cannot justify hasty decisions made in the absence of concrete scientific evidence.

#### ENDNOTES

1 FINAL REPORT OF THE TECHNICAL EXPERT COMMITTEE (July 22, 2013), available at [www.greenpeace.org/india/Global/india/report/2013/TEC-report.pdf](http://www.greenpeace.org/india/Global/india/report/2013/TEC-report.pdf). See also Gargi Parsai, *No GM Field Trials Till Regulation Gaps Are Addressed, Says TEC Final Report*, THE HINDU (July 23, 2013), at <http://www.thehindu.com/news/national/no-gm-field-trials-till-regulation-gaps-are-addressed-says-tec-final-report/article4942668.ece?ref=relatedNews>.

- 2 Press Information Bureau, Government of India, Field Trial of GM Plants in the Country (Mar. 19, 2013), <http://pib.nic.in/newsite/erelease.aspx?relid=93976>.
- 3 Including cotton, rice, tomato, groundnut, potato, corn, sorghum, okra, brinjal, mustard, wheat, watermelon, papaya, sugarcane, rubber, castor, banana, pigeon pea, *Artemisia annua* L. and chickpea.
- 4 Aruna Rodrigues vs. Union of India, Writ petition (Civil) of 260 of 2005.
- 5 Ministry of Environment & Forests, Decision on Commercialisation of Bt-Brinjal (Feb. 9, 2010), available at [moef.nic.in/downloads/public-information/minister\\_REPORT.pdf](http://moef.nic.in/downloads/public-information/minister_REPORT.pdf).
- 6 Report of Dr S K Sopory Committee on BNLA106 event (Genetic Transformation of an elite Indian Genotype of Cotton, *Gossypium hirsutum* L.) for Insect Resistance (Aug. 2012), available at <http://icar.org.in/files/BN-Bt-cotton-report.pdf>.
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- 8 The Review Committee on Genetic Manipulation was established under the Hazardous Microorganisms Rules.
- 9 The TEC singled out the Norwegian government specifically, because it considers Norway's initiatives to be in consonance with what India is striving to achieve.
- 10 Biotechnology Regulatory Authority of India Bill of 2013.
- 11 See Nitin Sethi, *Jayanthi Natarajan Opposes Pawar's Views on GM Crops, Wants Field Trials Put on Hold*, THE HINDU, Aug. 3, 2013, <http://www.thehindu.com/news/national/jayanthi-natarajan-opposes-pawars-views-on-gm-crops-wants-field-trials-put-on-hold/article4982776.ece>; Vishwa Mohan, *Sharad Pawar Bats for GM Crops in House, Holds Up Bt Cotton as Success Story*, TIMES OF INDIA, Aug. 28, 2013, [http://articles.timesofindia.indiatimes.com/2013-08-28/india/41537524\\_1\\_bt-cotton-gm-crops-bt-crop](http://articles.timesofindia.indiatimes.com/2013-08-28/india/41537524_1_bt-cotton-gm-crops-bt-crop).
- 12 *Gujarat Activists Join Protest Against Genetically Modified Crops in Delhi*, DNA INDIA.COM, Aug. 9, 2013, <http://www.dnaindia.com/ahmedabad/1871940/report-gujarat-activists-join-protest-against-genetically-modified-crops-in-delhi>.

## Urban Waste Management: Issues and Challenges

Waste management poses a great challenge in urban India. Huge volumes of waste are generated in cities, and the existing management framework is limited. Waste management is one of the most poorly rendered public services in nearly all Indian cities, not only harming the environment and human health, but also reflecting badly on cities' aesthetics and governance.

Problems with urban waste management are found at various levels. Growing quantities of waste, both industrial and municipal, have always created challenges for authorities, but changes in urban consumption practices have also created increased volumes of non-biodegradable, inorganic, and, in many cases, highly hazardous and toxic waste scattered around cities. Indian cities suffer from all of the following: a scarcity of waste treatment and disposal sites; a lack of sound policy or practices for the segregation of waste; poor enforcement of existing laws; and a poorly regulated informal waste management sector.

Globally, waste management has evolved from mere garbage collection and disposal to holistic and environmentally sustainable management practices, founded on the principle of *reduce, reuse, and recycle*. However, India, years behind this evolution, still struggles

with old waste collection and disposal techniques. Even these are plagued with administrative inefficiency and poor enforcement.

### Waste Management and the Roles of Various Stakeholders

Waste management is the primary responsibility of urban institutions or municipal authorities. Under the Indian Constitution, municipal bodies are responsible for urban planning, public health, sanitation, and solid waste management.<sup>1</sup> In addition to municipal solid waste, urban areas generate various classes of industrial and hazardous waste, including electronic waste and bio-medical waste. Such classes of waste are primarily regulated by pollution control boards under a different set of laws,<sup>2</sup> and municipal authorities do not play a significant role in their management.

Under the Indian Constitution, it is the fundamental duty of every citizen to protect and improve the environment: it is a collective responsibility.<sup>3</sup> A similar duty has been cast on India under the *Directive Principles of the State Policy*.<sup>4</sup> Different organs of government are responsible for formulating and enforcing relevant policies and laws, setting up necessary infrastructure, overseeing the implementation of laws, and conducting research into more efficient ways of waste processing. At the same

time, citizens and industry, the generators of waste, must dispose of waste in consonance with environmental and health concerns and the law.

Waste management should be viewed from the perspective of “polluter-pays,” particularly with regard to toxic or hazardous industrial waste. The Comptroller and Auditor General (CAG) of India, in its report *Management of Waste in India*, suggested adopting the polluter-pays principle to deter open waste dumping, which creates health and environment hazards.<sup>5</sup> Accordingly, the regulations governing the management of industrial or hazardous waste vest the obligation of waste treatment and disposal with the waste generator.<sup>6</sup> The Hazardous Wastes (Management, Handling and Transboundary Movement) Rules, 2008, hold the occupier, transporter, importer, or operator of a hazardous waste treatment facility liable for damage caused to the environment due to improper handling or disposal of hazardous waste. In such cases, the pollution control boards may impose penalties for rule violations.

However, two issues persist. It is not clear whether the penalties would be commensurate with the actual damage caused to the environment to cover the cost of remediation. Nor is it clear whether the funds collected are actually allotted for environmental restoration and site remediation.

### **Municipal Waste Management**

Urban waste management is governed by the Municipal Solid Wastes (Management and Handling) Rules, 2000, (MSW Rules) framed under the Environment Protection Act, 1986. The MSW Rules set out the general overview of waste collection, storage, processing, and disposal of municipal solid waste and place municipal authorities in charge of these functions. Municipal solid wastes include commercial and residential wastes generated in a municipal area, including treated biomedical wastes, but not industrial hazardous wastes, which are managed under other rules. Under the MSW Rules, pollution control boards at the state and central level are responsible for monitoring compliance with standards regarding groundwater, ambient air, leachate quality, compost quality, and incineration. Pollution control boards are also responsible for authorizing the establishment of waste-processing sites by municipal authorities and private agencies.

The MSW Rules lack detailed and workable solutions to critical waste management issues. They do not prescribe the minimum standards for waste management to be followed by municipal authorities. For example, the

segregation of waste at its source is not a norm and has been left to the discretion of citizens. The MSW Rules only provide that municipal authorities should organize awareness programs to encourage citizens to segregate wastes at source. There is no emphasis on reduction, reuse, or recycling of waste generation, or on the imposition of penalties for dumping waste in open areas, or for noncompliance with the rules themselves. Thus, in dealing with urban waste scattered around the city, it is difficult to place responsibility on either the residents or municipal authorities. If the municipal authority fails to comply with its obligations, the citizens have no recourse against it under the MSW Rules; they can only approach the courts by way of a citizen suit or public interest litigation.

The enforcement of the MSW Rules is another challenge. Various provisions of the MSW Rules, including the identification and improvement of landfill sites and the setting up of waste disposal facilities, were to be implemented by December 2003 or earlier. To date, compliance with these guidelines is a distant dream for many states and cities in India.

Procedural lapses in compliance exist at every stage. For example, the rules mandate that the municipal authorities organize door-to-door collection of wastes from residential and commercial areas, including from slums and slaughterhouses. In reality, however, a huge portion of waste collection, storage, and segregation is handled by the informal sector in India. Similarly, the MSW Rules make it clear that landfill sites should be situated away from habitation clusters, but this regulation is often ignored. One of the biggest landfill sites in the Delhi region, the Ghazipur landfill site, is located very close to a residential area and a heavily congested national highway.

According to a report prepared by the Ministry of Environment & Forests, municipal authorities do not have the capability or resources to implement the MSW Rules.<sup>7</sup> Yet, the authorities’ limited financial and human resources are not judiciously used, and, as discussed below, the judiciary in India has not accepted poor financial resources as a reason for municipal authorities’ non-performance of statutory duties.

There are, however, state-level initiatives that could serve as a model for other parts of the country. Under the Maharashtra Non-Biodegradable Garbage (Control) Act, 2006, and the rules framed under the Act, Maharashtra State has begun regulating the illegal dumping of non-biodegradable waste, including plastic waste and electronic waste. This offense is punishable with a fine or, for repeat offenders, with imprisonment. Cooperative housing

societies, hotels, shops, and commercial establishments must provide different receptacles for the disposal of biodegradable and non-biodegradable wastes.

The central government recently proposed draft Municipal Solid Waste (Management and Handling) Rules, 2013. If approved, they will supersede the current MSW Rules. The proposed rules introduce new provisions for the reduction, recycling, recovery, and reuse of municipal waste. The proposed rules emphasize the use of municipal solid waste by adopting suitable technologies, including composting, anaerobic digestion, and co-incineration. The proposed rules also require the engagement of private players in waste management, including waste pickers working in the informal sector.

The proposed rules are surely a step in the right direction, but no significant results can be expected unless municipal authorities are held accountable. There is a need to build in stringent provisions to ensure effective implementation, such as time lines for implementation and penalties for noncompliance. Municipal authorities should also be responsible for framing time-bound working plans for waste management in their respective territories.

### **Right to Health and Environment and the Role of the Judiciary**

The fundamental right to health and environment is very relevant to waste management. Disorderly waste management mechanisms, poor public sanitation systems, and unhygienic living conditions violate the right to health and environment and, in turn, the right to life, all guaranteed by the Indian Constitution. On numerous occasions, the judiciary has had to intervene to enforce such rights. In one landmark case, *Dr. B.L. Wadehra v. Union of India*, public interest litigation was filed before the Supreme Court seeking to have the municipal authorities in Delhi instructed to perform their statutory duties relating to waste management.<sup>8</sup> The Supreme Court issued detailed instructions to the municipal bodies in Delhi, state governments, and pollution control boards for the performance of their statutory duties under the applicable municipal and other laws. The order of the Court was founded on the principle of the right to life.

The poor state of affairs concerning public health and sanitation in the national capital was again brought up before the Supreme Court soon afterward. In *Almitra H. Patel v. Union of India*, the Court observed that the detailed orders, comprising 14 specific directions, issued to the municipal authorities in the earlier proceedings

had not been fully and effectively implemented.<sup>9</sup> The Court refused to excuse pollution in the cities for lack of funds or resources. According to the Court,

it is no doubt correct that rapid industrial development, urbanisation, and regular flow of persons from rural to urban areas have made major contribution toward environmental degradation but at the same time the authorities entrusted with the work of pollution control cannot be permitted to sit back with folded hands on the pretext that they have no financial or other means to control pollution and protect the environment.

In this matter, the Court also created a committee to look into various aspects of urban solid waste management. The Court further reinforced the question of lack of efficiency and accountability of the authorities and their staff, observing,

the local authorities are constituted for providing services to the citizens not merely to provide employment to a few of its inhabitants. Tolerating filth, while not taking action against the lethargic and inefficient workforce for fear of annoying them, is un-understandable and impermissible. Non-accountability has possibly led to lack of effort on the part of the employees concerned.

Similarly, in another matter, the residents of Ratlam, a municipality in the state of Madhya Pradesh, filed a complaint under Section 133 of the Code of Criminal Procedure with a sub-divisional magistrate complaining about unsanitary conditions and the stench and stink caused by open drains and industrial pollutants. Section 133 empowers a district magistrate or a sub-divisional magistrate to deal with nuisance issues, including the disposal of any explosive or flammable substance, carrying on any trade or occupation or keeping of any goods or merchandise that is injurious to the health or physical comfort of the community, or causing unlawful obstruction to rivers or channels. The magistrate found merit in the petition and ordered the municipality to provide the requisite amenities and to take remedial action to abate the nuisance. This order was found unjustified by a sessions court, but was upheld by the Madhya Pradesh High Court. Eventually, the matter came up before the Supreme Court, which upheld the decision of the High Court. The Supreme Court noted that the Criminal Procedure Code operates against statutory bodies and that human rights have to be respected by the state

pursuant to the Constitution regardless of budgetary constraints, stating,

where Directive Principles have found statutory expression in Do's and Dont's the court will not sit idly by and allow municipal government to become a statutory mockery. The law will relentlessly be enforced and the plea of poor finance will be poor alibi when people in misery cry for justice.

### Sustainable Waste Management: The Way Forward

It is time India reconsiders and redesigns its current waste management framework. Scientists and environmentalists agree that sustainable waste management is the best approach. Sustainable waste management involves a waste management hierarchy: avoiding the generation of waste; reusing, recycling, and recovering useful "waste"; and treating and disposing whatever waste remains. It involves an integrated approach, encompassing technological, policy, administrative, and legal measures toward effective waste management.

Adopting this principle, however, would require a complete overhaul of the Indian regulatory regime and its enforcement mechanisms. Strengthening municipal authorities' accountability and setting out clear and time-bound goals are good starting points. Without effective enforcement, sustainable waste management cannot be

transformed into a reality. Public-private partnerships may also be explored, particularly with regard to setting up infrastructure for the collection, transportation, treatment, and disposal of wastes. The role of the informal sector in waste management should not be disregarded or avoided; formalizing the work of manual scavengers and other informal waste managers may ensure that they serve under hygienic and environmentally sound conditions.

The process of waste management begins with waste generation. The reuse and recycling of waste and converting it into energy where possible through advances in technology constitute critical components of a sound waste management cycle. Incentivizing the reduction of waste generation and penalizing noncompliance are also required.

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#### ENDNOTES

- 1 Entry 6, Schedule XII, Constitution of India.
- 2 The Hazardous Wastes (Management, Handling and Transboundary Movement) Rules, 2008, Bio-Medical Waste (Management and Handling) Rules, 1998 and E-Waste (Management and Handling) Rules, 2011.
- 3 Article 51-A(g), Constitution of India.
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- 5 *CAG for Polluter Pay Principle to Curb Waste Dumping*, TIMES OF INDIA, Dec 21, 2008, [http://articles.timesofindia.indiatimes.com/2008-12-21/pollution/27934455\\_1\\_construction-and-demolition-waste-hazardous-wastes-management-and-handling](http://articles.timesofindia.indiatimes.com/2008-12-21/pollution/27934455_1_construction-and-demolition-waste-hazardous-wastes-management-and-handling).
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- 8 Dr. B.L. Wadehra vs. Union of India and Others (AIR1996SC2969).
- 9 Almitra H. Patel vs. Union of India (2000), 3 SCC 575 B.

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## Mandatory Provisions for Corporate Social Responsibility

The recently enacted Companies Act, 2013<sup>1</sup> introduced a provision making it mandatory for certain companies to dedicate a portion of their profits for corporate social responsibility (CSR) activities stipulated in the Act, including, inter alia, those undertaken for ensuring environmental sustainability.

Clause 135 of the Act applies to companies with one of the following characteristics: (1) a net worth of five hundred crore rupees (US\$83 million) or more; (2) an annual turnover of one thousand crore rupees (US\$167 million) or more; or (3) net annual profits of five crore rupees (US\$0.83 million) or more during any financial year.

These companies are required to constitute a CSR committee comprising three or more directors of the company, including at least one independent director. These committees are required to formulate and recommend to the board of directors a CSR policy outlining the CSR-related activities to be undertaken by

the company. These policies may include environmental sustainability programs. Committees are also required to recommend the amount of expenditure to be incurred on the policy and also to monitor its implementation. A company's board of directors approves the company's CSR policy based on its committee's recommendations.

During every financial year, every company covered under the mandatory CSR provision is required to dedicate at least two percent of its average net profits made during the three preceding financial years in pursuance of its CSR policy.

The CSR provision's goal is to instill a culture wherein companies undertake social responsibility, especially locally. Companies are free to select CSR activities within the options specified in Schedule VII of the Act.

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#### ENDNOTE

- 1 Companies Act, 2013 (No. 18 of 2013). The Act has been passed by both houses of the Parliament and has also received the assent of the President of India. It will come into force as and when the Government may notify in the official gazette.