THE SUPREME COURT OF INDIA

I.A. No.____ OF 2006

WRIT PETITION (CIVIL) No. 260/2005

IN THE MATTER OF:-

ARUNA RODRIGUES & ORS. ...PETITIONERS

VERSUS

UNION OF INDIA & ORS. ...RESPONDENTS

IN THE MATTER OF:

ARUNA RODRIGUES R/O BUNGALOW 69, MHOW CANTT., MADHYA PRADESH – 453441

.....APPLICANT/PETITIONER

VERSUS

- 1. MR. SHRI B.S. PARSHEERA
 CHARIMAN
 GENETIC ENGINEERING APPROVAL COMMITTEE
 MINISTRY OF ENVIRONMENT AND FORESTS
 PARYAVARAN BHAVAN, CGO COMPLEX
 LODI ROAD, NEW DELHI
- 2. MR. C.D. MAYEE
 CO-CHAIRMAN
 GENETIC ENGINEERING APPROVAL COMMITTEE
 MINISTRY OF ENVIRONMENT AND FORESTS
 PARYAVARAN BHAVAN, CGO COMPLEX
 LODI ROAD, NEW DELHI
- 3. MS. RANJANI WARRIER
 MEMBER SECRETARY,
 GENETIC ENGINEERING APPROVAL COMMITTEE
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 PARYAVARAN BHAVAN, CGO COMPLEX
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APPLICATION ON BEHALF OF THE APPLICANT/PETITIONER U/S 12 OF THE CONTEMPT OF COURTS ACT, 1971 READ WITH RULE 3 (c) OF THE RULES TO REGULATE PROCEEDINGS FOR CONTEMPT OF THE SUPREME COURT, 1975 FOR INITITATING CONTEMPT PROCEEDINGS AGAISNT THE CONTEMNORS/RESPONDENTS ABOVENAMED

To
The Hon'ble Chief Justice &
His Companion Justices of the Supreme Court of India

The humble application of the Petitioners above named.

MOST RESPECTFULLY SHEWETH:-

- 1. That the applicant above-named is filing the instant application seeking the initiation of contempt proceedings against the above-named contemnors/Respondents for wilfully and deliberately disobeying the explicit orders of this Hon'ble Court dated 22nd September 2006, 8th May, 2007 and 1st August 2007 passed in the abovementioned writ petition.
- 2. That the above mentioned Writ Petition was filed by the Petitioners seeking to put in place a protocol that shall mandate the sound scientific examination of all relevant aspects of Biosafety, before each GMO is sought to be approved and released into the environment. Petitioners are now constrained to file this Application for Contempt of Court of the Hon'ble Court's Orders of the 22nd September 2006, by which further approvals of field trials by the GEAC had been injuncted. That order remains in force today. However, despite this, in blatant contempt of this order, the GEAC has in its 79th meeting on 8.08.2007 allowed field trials of Bt. Brinjal, Bt. Rice, Bt. Tomato, Bt. Okhra, Transgenic Groundnut etc. A legal notice dated 24th August, 2007 to this effect was sent to the Member Secretary of the GEAC i.e. Ms. Ranjini Warrier by Counsel for the Petitioners to stop these trials. There has been no satisfactory response to this.
 - 2. India faces a very present, dire crisis; the consequences to health, food purity, food security, farming practices, farmers' livelihoods and biodiversity, are irreparable, because genetic contamination at the molecular level is irreversible. One year ago, India faced exactly the same situation when Petitioners filed an Application for Urgent Interim Orders (kindly see I.A. No. 4 of 2006 filed on 1.08.2006, Volume Index XI). The Hon'ble Court, recognising the need for great caution in the matter of GE crops, PARTICULARLY GM FOOD CROPS, granted relief with an injunction on 'approvals' from 22nd September, 2006, THEREBY FORESTALLING THE IMMINENT, ILL-CONCEIVED APPROVALS BEING PLANNED BY THE REGULATOR OF LARGE-SCALE FIELD TRIALS (LST) OF BT BRINJAL. This injunction on;

- (a) Large Scale Trials of Bt brinjal remains unambiguously in place, along with;
- (b) So also the injunction on new events/new products of GM food crops well as Bt Cotton, and
- (c) All 'new approvals'.

The Minutes of the 78th & 79th Meeting of the GEAC confirm the facts stated herein, of a b & c.

It is therefore relevant and appropriate for Petitioners to both firstly, present the history of the Hon'ble Court's Orders of the 22nd September 2006, 8th May, 2007 and 1st August 2007. Thereafter, Petitioners provide a summary of the well-grounded reasons in BIO-SAFETY and therefore, the Precautionary Principle that have underpinned the Court's protective and critical relief to India, to safeguard her from the hazards of GM products and their irreversible consequences, because of the certain contamination that will result from the wholesale experiment with field trials of a range of GM food crops which have been approved by the Regulator. The incomprehensible approvals of LSTs of Bt brinjal, are unprecedented anywhere. They point most forcefully to the unrelenting determination of the Regulator to facilitate the market expansion of GM food crops despite the incontrovertible evidence of serious hazards. LSTs OF BT BRINJAL WILL BE A UNIVERSAL FIRST AND THAT TOO IN A COUNTRY THAT IS A CENTRE OF ORIGIN FOR THIS PLANT. These have never been contemplated before for very sound reasons. It is for this reason that Peru has successfully banned any transgenic crop in native species including potato (kindly see para 8 of I.A. No. 18 OF 2007). It may be noted that India is also the Centre of Origin of rice and many other native species. As an 'ecological hotspot', and one of 17 centres of megadiversity, worldwide, only urgent, rectifying action will safeguard India's biodiversity from irreversible harm from GM crops. A copy of the Legal Notice dated 24th August, 2007 by the Petitioners to the Member Secretary, GEAC and the copy of the minutes of the 79th Meeting of the GEAC held on 8.8.2007 are annexed hereto as Annexure C1 (Colly).

RECAP OF ORDERS & THEIR BASIS IN BIO-SAFETY PROTECTION

3. 22nd Sept. 2006 Order: On the 22nd September 2006, the Hon'ble Supreme Court saw fit to injunct 'approvals' by the GEAC of field trials from this date, but allowed what was in the pipeline between 1st May and 22nd September to continue, by directing the GEAC "TO WITHHOLD APPROVALS UNTIL FURTHER DIRECTIONS ARE ISSUED ON HEARING ALL CONCERNED." This order was in response to the evidence provided in Petitioners Application Volume Index XI of 1st August 2006. Petitioners had stated:

"In the 4 months since the filing of the Rejoinder Affidavit, matters have escalated to such an extent that India is faced in the present, with an unprecedented, full scale onslaught of GE crops---. The PLAN TO ALLOW LARGE-SCALE FIELD TRIALS OF BT BRINJAL by the biotech company Mahyco (Indian collaborative and partner company of Monsanto), preparatory to its commercialisation is a major crises facing India of untold magnitude, as will be apparent from the evidence in this Application".

"On the 1st May 2006, the Supreme Court (SC) through its Order, acknowledged the serious consequences of the absence of compliance with biosafety norms that have become the hallmark of the 'Regulators' and the consequent impacts of contamination during limited field trials or MLTs: The Order states":

'TILL FURTHER ORDERS, FIELD TRIALS OF GENETICALLY MODIFIED ORGANISMS

(GMOs) SHALL BE CONDUCTED ONLY WITH THE APPROVAL OF THE GENETIC

ENGINEERING APPROVAL COMMITTEE (GEAC').

"The implicit direction in the Order to the GEAC is to carry out its mandate under the Environment Protection Act (EPA) of the Ministry of Environment and Forests (MoEF) and institute rigorous and stringent biosafety protocols with due regard for the processes in safety testing procedures, which are required to be executed with honest purpose and integrity. However, in the '67th Meeting of the Genetic Engineering Approval Committee' held on 22.05.2006, the GEAC brushed aside all such concerns. In defiance of the spirit of the Order it has ACTED TO RUBBERSTAMP the RCGM request for:

- (a) an astonishing 91 GM products for MLTs;
- (b) addressing the request to approve large-scale field trials for Bt Brinjal this Kharif as a prelude to its commercialisation, as well as;
- (c) Bt potato and rape later this year".

In I.A. No. 4, (Vol. Index XI), the prayer is for issue of directions "to stop all field trials for all genetically modified products anywhere and everywhere with immediate effect", beside certain other prayers.

The Order of the 22nd September 2006, dealt with this situation by Ordering:

"At this stage, without the stand of the respondents, we are not inclined to direct stoppage of field trials. At the same time, we deem it appropriate to direct the GEAC to withhold the approvals till further directions are issued by this Court on hearing all concerned....."

THEREBY, AS A RESULT OF THIS ORDER, LARGE-SCALE TRIALS (LST) OF BT BRINJAL THAT WERE PENDING APPROVAL BY THE GEAC WERE DISALLOWED; WHAT WAS IN THE PIPELINE BETWEEN THE CRUCIAL DATES OF 1ST MAY AND 22ND SEPTEMBER, 2006, WAS PERMITTED TO BE COMPLETED (91 GM PRODUCTS FOR MLTS).

4. The 8th May 2007 Order: On the 8th May, 2007 this Hon'ble Court noted, with specific reference to the field trials conducted between the 1st May and 22nd September 2006, that "91 field testings are going on" and ordered:

"The GEAC shall take sufficient precaution to see that THESE trials are not causing any contamination to the cultivation of neighbouring fields"

It went on to prescribe stringent conditions for 'THESE' field trials to ensure that there was no contamination.

5. 1st August 2007 Order: In July 2007, Petitioners Application for Urgent Interim Orders i.e. I.A. No. 18 of 2007 brought the following facts to the attention of this Hon'ble Court: (a) that all field trials approved between May and Sept. 2006 had been *completed*. That henceforth, all field trials by what ever name, constituted NEW approvals for the current Kharif and even the next Rabi season; (b) it was also clear that the GEAC had embarked on a series of approvals of GM food

crops as well as Bt cotton that constituted NEW PRODUCTS AND NEW EVENTS. These facts were abundantly clear from the 78th Meeting of the GEAC (kindly see Annexure M1 of I.A. No. 18); (c) that Regulatory procedures had been routinely & regularly flouted in the most serious way, from the start, i.e. the inception of Bt Cotton; that till date, i.e. a full six years after the commercial release of Bt Cotton; the basic requirements of an overseeing bio-safety regimen at the State level were not in place, nor had any training been given at the State level to ensure the necessary capability in bio-safety processes and procedures. Many SBCCs (State Biotechnology Co-ordination Committee) are even now not constituted. The Hon'ble Court "issued notice. Reply if any, be filed within three weeks".

THE 79TH MEETING OF THE GEAC OF THE 8TH AUG. 2007 RECORDS MORE APPROVALS: THE GEAC IS IN CONTEMPT OF THIS HON'BLE COURT'S ORDERS

- **6.** This meeting minutes the following Approvals:
 - i. Large-scale field trials of Bt brinjal in multiple locations have been approved by the GEAC based on the recommendations of the RCGM and Expert Committee Report on Bt Brinjal (kindly refer to point 9.1 of the 79th Meeting of the GEAC, Annexure C1 (Colly)). The meeting of the Expert Committee on Bt. Brinjal was held on 3.7.2007 under the Chairmanship of Dr. C.R. Babu, former Pro-Vice Chancellor of the Delhi University. Dr. Ranjani Warrier, Member Secretary, GEAC and Director, MoEF was one of the members of the Expert Committee. It was in this meeting that a decision to recommend Large Scale Field Trials of Bt. Brinjal was taken. It is relevant to mention here that the bio-safety tests on Bt. Brinjal have not been completed. This is therefore in breach of current regulations. It is unambiguously in serious breach of Court Orders. That based on the recommendations of RCGM and of the Expert Committee on Bt. Brinjal, the GEAC in its 79th meeting decided that these field trials will be conducted in

Institutional premises of the ICAR and its affiliates. Counsel for Petitioners, in his legal notice to the GEAC dated 24th August 2007 wrote:

"the approvals granted by you in your 79th Meeting, of Large-scale field trials of Bt Brinjal are unprecedented and contravene the Orders of the Supreme Court. It is to be noted that LSTs of Bt Brinjal were not approved by the GEAC at any time prior to the 22nd Sept. 2006. Furthermore, your attempt to legitimise these LSTs by requiring them to be conducted in 'Institutional' premises whether of the ICAR or any other, rather than in farmers' fields, does not legitimise the trials in any shape or form. They remain in contravention of the Orders of the Hon'ble Court. For the record, neither do they insulate against the biological certainty of eventual contamination, the risk of which is substantially increased through LSTs."

- ii. Item 3.1 is listed as a new_GM crop/event of TNAU (Tamil Nadu Agricultural University) comprising 4 Bt brinjal varieties under the EE1 or Cry 1Ac gene event.
- iii. Item 4 is listed as 'Pollen flow' studies of *new* GM Crops or events, for Bt brinjal (Cry 1F) of Bejo Sheetal Seeds; Bt Okra, of Maharashtra Hybrid Seeds Co.; Marker-free Bt rice (Cry2Ab); and marker free Bt tomato (cry 2Ab)
- iv. Item 5.0 is listed as 'strip trials of GM crops of new_genes/events, for GM rice (truncated synthetic Cry1Ac) of Metahelix life Sciences; GM Groundnut vars JI-24 (Chitnase gene) of ICRISAT
- v. Item 10.2 Bt Brinjal Cry1 Fal gene of Bejo Sheetal Seeds. From other documents sourced from the GEAC, this is a *new event*.

Petitioners humbly re-emphasise that the GEAC continues to act as a mere rubber-stamping authority for the RCGM, which as part of the DBT continues to make the real decisions on GM crops, whether field trials or bio-safety assessment. In practise and in spirit, the GEAC has abrogated its duties as the Regulator for GM Crops. Furthermore, Respondents have on 9th August 2007,

filed an Application for Modification of Orders of the 8th May 2007. Prayer 'c' states:

"Pass an order modifying the order dated 08-05-2007 thereby directing that transgenic crops other than those referred to in the order dated 08.05.07 passed by this Hon'ble Court, may also be permitted by the GEAC to conduct research and development and further evaluation (for) the benefit of society"

This Prayer reveals first, that the GEAC is well aware that its Approvals in the 78th and 79th GEAC Meetings of LSTs of Bt brinjal, field trials of GM food crops and Bt cotton contravene this Hon'ble Court's Orders; second, that its predetermined stance that GM crops benefit society is inappropriate in a Regulator that must be properly sceptical of a technology that is recognised in science to be hazardous. Petitioners have given evidence of a serious conflict of interest both within the Union of India and the Regulator. The co-chair and the moving force of the GEAC, Dr. CD Mayee, is a board member of the ISAAA, the organisation referred to above, which was established and funded by the biotech industry and which is devoted to increasing the use of biotech crops in developing countries (kindly see Annexure W20 (Colly) Volume XXXIII). There is thus, a clear conflict of interest between Dr. Mayee's role as the chief regulator of biotech crops in India, and his role as a director of ISAAA, where he is obviously committed to promoting GM technology in India. There is then the case of **Dr. TV Ramanaiah**, ex-Member-Secretary, RCGM. He is known for the many approvals he personally gave as Member-Secretary of RCGM to hundreds of GM crop field trials that have and are taking place in India. He has now left the DBT to join Pioneer HiBred International (a subsidiary of DuPont) as their 'Biotech Regulatory Affairs Manager'. He is further named as a Spokesperson of the All India Crop Biotechnology Association (AICBA) an industry body consisting of several companies as its members – ones that have approved Bt Cotton varieties and other GE crops in the pipeline. Then that is the case of Shri Deepak Paintal, who holds the patent for GM mustard which has been cleared for field trials by the GEAC.

However, Shri Paintal himself has been appointed by the GEAC as the chair of the sub-committee which is to examine and recommend clearance of Bt Brinjal. This is also a clear case of conflict of interest where a promoter of a GM crop is being asked to function as a regulator of another GM crop. There is a very fluid line between the crop developers and the Government Regulator. It effectively establishes that for all intents and purposes the Regulator functions as an extension of the GE biotech industry, 'oriented' to facilitating industry objectives of the commercialisation of a vast array of GM crops to the detriment of India's national interest and the non-negotiable sovereign issue of the protection of her BIODIVERSITY.

Unless this matter, which is fundamental to proper regulation, is remedied satisfactorily to ensure no bias, & that it is ensured that stringent bio-safety processes and procedures are implemented with rigour and complete transparency, the regulation of GM crops as currently practised, presents India with the most serious, and irreversible consequences of a magnitude that cannot be predicted. There is, therefore, no alternative to a stern enforcement of the current moratorium on field trials which has been in place since the 22nd September 2006 and not vacated by this Hon'ble Court in its subsequent Orders of the 8th May and 1st August 2007. The Minutes of the 2nd meeting of the 'Expert Committee on Bt brinjal' held on 3.07.2007 is appended herewith as **Annexure C2**.

BT COTTON CANNOT BE THE 'TEMPLATE' FOR THE INTRODUCTION OF BT FOOD CROPS AS THE TRANSGENE IS PROVEN BY SCIENCE TO BE TOXIC AMONGST OTHER EVIDENCE OF SERIOUS CONCERN.

7. The GEAC has taken a position that the Bt transgene has been proved safe in the decade or so of the introduction of Bt cotton, first in the US and in the last 6 years in India. It also claims along with statistics provided by the crops developer that Bt cotton is an unqualified success with higher yields and lower costs for farmers. Both claims are manifestly untrue. It is important to keep in

mind that Bt cotton cannot make a claim to increased yields from varieties/hybrids which have been engineered to encode for Bt Cry proteins in cotton. It is the parental lines that confer traits. These are Non-GM. This is a statement of scientific fact; but the promotion and 'broadcast' by the crop developers imply the opposite, and 'Regulatory Approval' gives credence to this abject untruth. A trusting farming community cannot be expected to understand or verify the truth until they have burnt their fingers; in some parts of India with fatal consequences. The facts below are summarised from Petitioners Submissions to the Hon'ble Court with added affidavits from world renowned scientists.

i. Dr. Arpad Pusztai, the world's leading specialist in the science of lectins or proteins (and Cry genes are lectins), has in his affidavit for this submission put together the significant research findings on the Bt transgene. He says: "there is now plenty of evidence that some Bt toxins are harmful for insects by binding to surface receptors in the digestive system Evidence that LECTIN BINDING TO THE DIGESTIVE SYSTEM OF INSECTS is the main reaction mechanism for the insecticidal effect of lectins in transgenic plants is NOW GENERALLY ACCEPTED --- AND IS PARTICULARLY STRONG. ---- With the work of Vazquez-Padron and others, however, it has been demonstrated that Bt toxins bind NOT ONLY to the insect gut but also to the MAMMALIAN GUT, LEADING TO VARIOUS IMMUNITY PROBLEMS. The claimed exclusiveness of the specificity of Bt toxinbinding to the insect gut can no longer be maintained." "--The capacity of various A-B toxin-lectins, including Bacillus thuringiensis (Bt) Cry1Ac protoxin to stimulate and modulate both the systemic and mucosal immune systems is now firmly established". --- Mons863 (a Bt corn) approved by EFSA (European Food Safety Authority) was found to be toxic, after a detailed study by Crigen, under the direction of Prof Giles Seralini, of Monsanto's own 90 day rat feeding study. It "revealed that rats fed on transgenically expressed Bt toxin in maize caused kidney and liver problems in addition to interfering with the normal growth of young rats. Bt toxin expressed in potatoes caused major changes in the small intestine of mice. -

- ----The evidence for the survival of the Bt toxins in the digestive tract and internal organs is clear-cut. Thus, it is expected that the situation with Bt brinjal will not be different. Accordingly, all the already described potentially harmful effects on consumers of the Bt toxins can also be expected to occur with Bt brinjal. As their release into the environment is an irreversible act, sanctioning such large scale field trials would be highly irresponsible".
- ii. "The potential for serious harm or even death ---was clearly and unambiguously demonstrated in a published manuscript that showed that a GE protein made by one plant does not cause an immunological reaction, while the IDENTICAL GE GENE EXPRESSED IN ANOTHER PLANT causes a severe immune reaction, and even worse, causes an allergic response to other plant proteins". (Prof Schubert referring to the pea study in Australia titled, 'Amylase in Pea From Bean' provided in evidence in the Rejoinder Affidavit Vol. VIII Annexure A 13). The pea immunology test is very important because it "formally proves that the assumptions underlying the 'event based' approval process are fundamentally wrong".

The copy of Dr Arpad Pusztai's opinion dated 30th August 2007 is appended hereto as **Annexure C3**.

- iii. Similarly, there is a de facto ban on Mons 810 because the Federal Ministry of Agriculture (Germany) states that new information "gives reasons to suppose that the cultivation of Mon 810 poses a danger to the environment" (kindly see Annexure M2 (Colly) of I.A. No. 18 of 2007).
- iv. The Bt toxin in GM crops is 1000 times more concentrated than in Bt sprays, which in any case do not in themselves have a history of safe use. "Thus Bt crops cannot be judged safe" (Prof Dave Schubert). In the plant, the Bt toxin is continuously produced in every part of it (kindly see Annexure W3 Volume XXXIII at page 50).
- 8. Problems on the Farm with Bt cotton: The evidence from various countries where Bt cotton has been commercially introduced including India, the USA,

China, the Philippines, now conclusively demonstrates that Bt cotton presents several serious problems which manifest themselves after 3-5 years and is far from the success story that it is hyped to be. Resistance to the Bt gene is a scientific fact, and is established on farms. The move worldwide and in India to introduce Bt cotton like Bollgard II with 'stacked' genes, (encodes for more than one Cry protein) is evidence of resistance setting in. Scientists are familiar with this well-known response in nature (examples are DDT and antibiotic resistance). Therefore, pesticide use for the targeted pest, the bollworm, after an initial drop, starts to increase as this phenomenon starts to manifest itself. The adverse farming economics of Bt cotton in India (and elsewhere) have had a serious toll on farmers' lives as Vidharbha and AP have witnessed. The Mumbai High Court judgement acknowledges this fact, along with the unsuitability of Bt cotton to rain-dependent conditions of agriculture in this belt.

China: The Study carried out by Cornell University, jointly with the Center for 9. Chinese Agricultural Policy, and the Chinese Academy of Science, looked at 7 years of Bt cotton in China. It is one of the most important studies undertaken on the experience with Bt Cotton and its economic impacts. China was one of the first countries to adopt Bt cotton, where it has been hyped almost more than anything and repeatedly been called a 'miracle crop' especially for millions of small farmers. The researchers from Cornell in the States working with Chinese agricultural scientists looked at data from nearly 500 FARMERS, across five major cotton producing provinces in China over a period of 7 YEARS. Initially, farmers did reduce their use of pesticide against the bollworm. In the longer term however, the pattern didn't hold-up. By 2004, they found that farmers were spraying more or less as much pesticide as farmers growing Non-Bt cotton, who had lower input costs in seeds. What is happening in China is very interesting and is a lesson for the rest of the world particularly India. Several years after planting Bt cotton, there are insect shifts, new pests move in. There is a similar problem with herbicide tolerant GM crops which result in weed shifts. So spraying with other pesticides goes up adding to both an

environmental problem as well as an economic problem and less healthy soils. (In AP they report a kind of soil rot). Cornell researchers say that they think these secondary pest problems could become a major threat in other countries where Bt cotton has been widely planted. And fulfilling this prediction, the 'mealy bug' has surfaced in both Punjab and MP as a secondary pest devastating Bt cotton crops

- 10. Punjab & MP: The Mealy bug has attacked large areas of Malwa. In the Punjab the Director Agriculture admits that despite a larger acreage under Bt cotton, the output will be lower because it is so widespread. Farmers are up-rooting the Bt cotton crop to get rid of it. However, organic cotton farmers are not facing problems with the *mealy bug*.
- 11. North America, Arizona: A major large-scale study in an area that has grown Bt Cotton for a decade simultaneously looked at yields, pesticide use and its effects on biodiversity. The researchers from the University of Arizona found Bt cotton farmers weren't getting higher yields by growing Bt cotton, despite all the claims made to that effect by the companies. They randomly selected 81 cotton fields - split between non-GM and GM cotton breeds - and they looked at them over the course of two growing seasons and they found that Bt cotton appeared TO OFFER NO BENEFITS AT ALL TO WILDLIFE. Pesticide use was down, BUT IN THE SECOND YEAR OF THE STUDY IT ROSE. Secondary pests could be the reason. One of the researchers who was asked about this said, "if you control some pests with GM cotton, other pests become more of a problem." The researchers also found from the Arizona Study that there was no reduction in herbicide use with HT (herbicide tolerant) GM crops. So both kinds of GM crops (Bt and HT GM) were not resulting in lower pesticide or herbicide use. Resistance, insect shifts and weed shifts are enforcing a furious treadmill of more pesticides, more herbicides, and vicious farm economics with GM crops that poor farmers cannot withstand. The Arizona report is not the only damaging report to emerge from

the Proceedings of the National Academies of Science (USA). There are also other formal findings from other States in the US.

India (The DDS, Deccan Development Society, AP, reports). To this must be added allergenicity reports effecting farm labour and cotton pickers in MP and the Philippines and three consecutive years of Sheep deaths in AP. The cumulative evidence is clear that there are confirmed and serious problems with the Bt transgene on safety grounds; performance and consequent yield reductions, new secondary pest problems that have emerged, negative farmer returns and hazardous environmental impacts. No objective Regulator which holds the public and national interest as a first priority can overlook these and emerge unscathed with regard to its integrity of functioning. But it is also clear, that the conflict of interest within the Regulators, (GEAC/DBT) is now too obvious and may not be ignored except at real peril to our Country's sustainable future.

The copy of the article titled, 'Bt Cotton in China fails to Reap Profit After Seven Years' published on 21st July, 2006 on the basis of the study conducted by Cornell University, the copy of the article titled 'Making a meal of Bt Cotton' by Bhaskar Goswami, the copy of the news report titled, 'Pest Attack: Punjab Bt cotton crop may be set back by 25%' posted on liveMINT.com on 4th September, 2007 and the copy of the article titled, 'GM cotton fails to improve biodiversity or yield' posted on 5.08.2006 on GM Watch are annexed hereto as **Annexure C4 (Colly).**

LARGE-SCALE FIELD TRIALS OF BT BRINJAL AND FIELD TRIALS OF OTHER

GM FOOD CROPS: THEIR HAZARDOUS IMPACTS AND THE ABSOLUTE

CERTAINTY OF CONTAMINATION ARE SCIENTIFICALLY CONFIRMED

13. Bt brinjal large-scale trials are a prelude to the commercialisation of this national vegetable. Quite apart form the fact that the Regulator is in serious

contempt of court, as LSTs of Bt brinjal were injuncted last year in the 22nd September 2006 Order (please see earlier history, point 3) these field trials also contravene the Regulator's own current rules that all bio-safety studies must be complete before approvals can be given for large-scale field trials. This is amply clear from the 79 Meeting of the GEAC and the Minutes of the 2nd Expert Committee on Bt Brinjal (kindly see Annexures C1 & C2). Furthermore, attention is drawn to the curious move to legitimise these trials along with other GM food crop trials, by requiring them to be conducted in Institutional premises, as though this will confer on them some kind of inability to spread transgenic contamination. Several ICAR institutions have rich germplasm collections and on this basis alone, right-minded scientists must raise a red flag to these GM food field trials, which should not be conducted. It is emphasised that US long grain rice along with FOUNDATIONAL SEED STOCK were contaminated by field trials of LL601 conducted by the Agricultural Department of Louisiana State University (LSU). At a test site in LSU, the scientist in charge of the field trials, Steve Linscomb went to great lengths to ensure that containment measures were not merely stringent, but that they went well beyond the norms prescribed for containment by the USDA. It still happened and how remains unanswered, even one year after inquiries were started. Time and again, we have seen national regulators, echo the line given out by crop developers, that contamination is unlikely or under some conditions of unfavourable conditions to contamination like, self pollinating crops like rice, virtually impossible. The GEAC is a conspicuous example. Every one of these assurances has been proved wrong. It is now accepted that containment measures EVEN OF SEVERAL MILES will not stop contamination. In general, the US National Academy of Sciences, in a report in 2004, concludes that it is very difficult to ensure that gene flow will not occur. The further example of GM Papaya field trials in Thailand clearly demonstrates that field trials conducted in institutional premises are no bar to the risks of contamination and may even increase these risks as they are frequently locations of rich germplasm collections and centres of distributions of seeds and plants.

- 14. The case of GM papaya in Thailand: Thailand regulations prohibit field trials of GM crops and their commercial production. Research is permitted only in laboratories or greenhouses. Yet, field trials of GM Papaya were undertaken on government institutional farms, circumventing the law. As a result of these field trials, contamination of Non-GM papaya has occurred. It is widely dispersed and has not been cleaned up. The institutional farms grew Non-GM varieties and were centres for the distribution of seeds and seedlings to farmers and the general public. Widespread contamination occurred (by seed mixing and cross pollination, wind, birds and insects) in a country known for its famous papaya and wide export markets. The trials exemplify the risks involved for India since the GEAC has undertaken to follow a similar path of conducting field trials of various GM food crops, including LST of Bt brinjal in institutional farms.
- 15. Furthermore, since sowing in the current Kharif is over, large-scale planting for Bt brinjal is only possible if there is a vast number of seedlings ready for transplanting. It is extraordinary that plans would have long been initiated and in secrecy, for these large-scale trials of Bt brinjal; they exemplify the complete breakdown and deliberate disregard of any commitment by the Regulator to India's bio-safety, and ignoring both regulations in force, as well as Court Orders. Petitioners provide below a summary of the evidence from mainly two comprehensive submissions to this Hon'ble Court on why India may not experiment further with field trials of *GM food crops and that the large scale trials of Bt brinjal are a particularly dangerous and unnecessary step that must be urgently stopped. (Kindly see Volume XI & Volume XXI).*

The case of the Thailand field trials of papaya are provided in **Annexure C5** (Colly).

Summary of Evidence

16. India: A Centre of Origin and Domestication of Brinjal & Rice: India is functionally a 'centre of origin' for brinjal. Solanum Melongena is the species

name for Brinjal or Eggplant and represents the cultivated variety not the wild species. Both compatible wild relatives and genetically diverse land races of the crop occur. The wild relatives that are known to exist in India are Solanum Incanum and Solanum Insanum. There is already work done that brinjal can cross with S Incanum. India is also the centre of origin of rice and many other plant species.

- 17. Biodiversity: Centres of origin and diversity of crops, and 'hot spots' of megadiversity like India, are immensely important to the World's future and of irreplaceable value. For example, "Genomic analysis has progressed in the last decade, leading to new techniques such as Marker Assisted Selection (MAS) that makes the use of genes from wild relatives or crop varieties (such as indigenous land races), through conventional breeding, even more valuable than previously. MAS is being used for more efficient conventional breeding, making wild relatives of crops and the diversity of indigenous varieties invaluable new sources of genes that may confer to the crop such traits as drought resistance, insect resistance, disease resistance, and others, THAT GENETIC ENGINEERING HAS OFTEN FAILED TO PRODUCE. Innumerable scientific papers have commented on the importance and value of genetic resources provided by land races and wild relatives, especially in centres of origin and diversity" (Doug G-S). Loss of diversity will devastate farming. Attention is drawn to Dr. Richharia's collection of 19,000 varieties of Indian rice strains and their immense value to biotech that they were plundered and now form part of the IRRI in the Philippines, which can now boast to have the richest germplasm of rice in the world. "It is extremely important that the potential harm to wild relatives and crop genetic resources by Bt brinjal be taken very seriously" (D GS).
- 18. The Hazards of Bt Brinjal: While various Bt toxins have been incorporated into GE corn and cotton for animal feed, it has never before been expressed in a vegetable crop for commercial production anywhere. There is a big difference

between GE corn and cotton which are primarily grown for animal feed and only small amounts are eaten by humans in the from of corn chips etc and refined cottonseed oil, which are highly processed and contains little or no cry toxins. Bt brinjal on the other hand would be the FIRST internationally, widely grown vegetable/food product with a Bt toxin. It is a major source of calories in India, because of its fat content, it is widespread, is part of the diet of most Indians, is eaten in significant quantities and while cooked, there is less processing. In Ayurvedha preparations, it is eaten raw, mainly root and stem and purity is a basic premise, which by definition must exclude any transgenic brinjal or contamination. Although crops containing the Bt gene have been consumed in the US, these crops are primarily used for animal feed or highly refined products like vegetable oil or high fructose corn sweetener, which contain little of the Bt toxin. Also, these products are not sold as food items in the EU, but are used for animal feed. The safety tests that have been used to date are very limited, with animal feeding studies restricted to short-term (usually 28-30 day) and a few medium term (90 day) tests. By contrast, food additives typically require long-term, extensive studies over several years. Furthermore, there are no epidemiological studies monitoring the public to verify whether consumption has truly been safe. Broadly, there are at least 5 major concerns about the safety of Bt Brinjal and why it would be a grave mistake to allow large scale trials of Bt brinjal in India as a prelude to its market introduction:

- i. Its hazardous potential for effecting human health
- ii. Potential environmental harm from the Bt Cry1Ac gene
- It will certainly contaminate the many varieties of brinjal currently grown in India as well as its wild relatives. Because India is a centre of origin and biodiversity of brinjal, where cultivated forms originated, there is special concern and responsibility to consider environmental impacts on wild organisms and brinjal biodiversity.
- iv. Non-GM farms including organic farms will be contaminated. This will be largely surreptitious and therefore unknown, will not be labelled and will

- therefore affect both farmers' rights and consumers and their food and health choices.
- v. It will evoke dissemination of mutant insects resistant to Bacillus thuringiensis. The natural bacterium B. t. is very important in advanced organic agriculture, so insects resistant to this pesticide would be a serious threat to many types of agriculture on which a country such as India inevitably & rightly relies.
- 19. Contamination from Field trials: Contamination is inevitable and is a function of frequency and scale, as well as other kinds of contamination that have occurred, i.e. accidental mixing of seeds, or during transportation, which are also significant causes of contamination, amply documented in several published papers and reports such as by the Union of Concerned Scientists. In India, the contamination of foundation cotton seed stock is fairly certain and it raises important concerns. It is also proven beyond doubt that insect, bees, and wind, cause contamination SEVERAL MILES from the test site and that confinement measures no matter how stringent cannot eliminate transgenic contamination from field trials. Some outstanding examples are in order:
 - i. In the GE creeping bentgrass Case in the US, a SINGLE large field trial (900 ft isolation distance) allowed the PERMANENT escape of herbicide resistant transgenes into wild creeping bentgrass. This field trial was set in semi-arid eastern Oregon (in a 'control district') to specifically prevent gene flow because the area around the 'control district' is so dry creeping bentgrass must have a moist environment. The USDA and its experts argued against gene flow because of the unsuitability of the environment. Gene flow did occur. The important issue is that even when the USDA took extra steps to prevent gene flow, it occurred any way.
 - ii. Segregation of non-GE canola in Canada has failed, leading to the collapse of its non-GE and organic canola industries. Farm incomes in Canada have plummeted since the introduction of GE canola and Canada has entirely lost its canola seed exports to Europe. Canada is the only major canola

producing country to have adopted GE canola and its farmers are heavily subsidised. "Those who assert that GM seeds increase farmers' net income need to produce some data. And, as we stand ten years after the introduction of these seeds, and as we stand mired in the worst farm income crisis in Canadian history, it is probable that such data will be hard to produce. The claim that GM seeds make our farms more profitable is false". Canadian National Farmers Union (2005).

The copy of the GreenPeace Submission to the NSW Review of the Gene Technology (GM Crop Moratorium) Act is appended herewith as **Annexure C6.**

- Sherman, (Kindly see Annexure M10 of I.A. No. 18 of 2007), he explains so-called 'leptokurtic' pollen distributions. i.e., instead of the gene flow amounts steadily tailing down to zero, they flatten out at low levels for large additional distances. Even at the longer distances of pollen flow detected by newer methods, contamination does not just end at these longer distances. The distribution (and gene flow) of pollen, BEYOND THESE DISTANCES, LEVELS OFF AT LOW AMOUNTS (TYPICALLY ABOUT 0.01- 0.05%) FOR UNKNOWN, BUT SUBSTANTIAL DISTANCES.
- iv. The March 2007 US court decision, banned future sales and planting of Roundup Ready alfalfa, a genetically engineered variety initially commercialised in June 2005. As for Roundup Ready alfalfa seed production, segregation distances proved ineffective even before the judge made his decision. In December 2006, just over a year after Roundup Ready alfalfa was commercialised, the Idaho Alfalfa and Seed Clover Association reported that Roundup Ready alfalfa traits were found in conventional alfalfa seed in Montana, Wyoming, and Idaho, including FOUNDATION SEED, WHICH CONTAINED ENOUGH TRANSGENIC MATERIAL TO DEEM IT USELESS AS SEED STOCK. The lawsuit that found USDA's approval of Roundup Ready alfalfa illegal, levelled the playing field, and SAID THAT A CROP VARIETY CAN'T BE GROWN AT THE EXPENSE OF SIGNIFICANTLY IMPACTING ANOTHER.

20. Bio-safety Data not published: Several world renowned scientists have given their opinion on the subject of LSTs of Bt brinjal (kindly see Vol. XI of Aug 2006) . Their comments unanimously declared that it was impossible to comment in the absence of real data on the Ministry's Website. The situation one year later is still the same. Dr. Pusztai says in his affidavit of 30th August 2007: Its "back to the same old problem: in the absence of data in the submission for allowing the large scale field trial of Bt brinjal it is impossible to formulate a critical evaluation of the proposal. --- Their assurances that they have these results but will not disclose them to us for evaluation are worthless". The Regulator continues to rely exclusively on industry-generated bio-safety studies and resists transparency. Citing CBI, (confidential business information) it has refused to release the compilation, analyses and reports of these studies backed by the raw data. The Petitioners humbly remind this Hon'ble Court that bio-safety studies conducted by crop developers who stand to gain from their favourable reports have little meaning and cannot be the basis for approvals of GM crops, and critically, GM food crops. PATENTS AND SECRECY ARE MUTUALLY EXCLUSIVE, SO CBI IS A BOGUS CLAIM. When one party wants secrecy at the expense of public interest and the other transparency, the party that sides with secrecy has something to hide. The people of India who are being subjected to irreversible experiments on the food they eat have in justice, an absolute priority to be protected; the public interest must override all objections to a completely transparent regulation on genetic engineering and its products. The Regulator stands accused of mortgaging the sacred trust of the people, to protect instead, the profits of the biotech GE industry.

THE EVIDENCE OF DAVID SCHUBERT OF THE SALK INSTITUTE OF BIOLOGICAL STUDIES

21. Prof. Dave Schubert's opinion for this submission to the Hon'ble Court is well worth reading in full. Important excerpts on significant aspects surrounding the safety of GM food crops and Bt brinjal in particular, are provided below:

- i. The GE process as currently practiced is an unsafe technology; it is therefore my position that at present, it is extremely unwise to allow the introduction of GM food crops into the environment in India where there is great biological diversity and need for stable food production. This is particularly true for an indigenous species and a major food source such as Brinjal.
- ii. It is argued by the GM producers that crops (mostly maize) containing the Bt gene have been eaten for 10 years (true) and therefore proven safe (not true), and that putting the same Bt gene into another crop means that it will also be safe to eat (absolutely not true).
- iii. The reason for the concern about the ability of GE plants to produce toxins, carcinogens, and compounds that cause birth defects (teratogens) is the result of the uncontrolled events that occur in the steps required to make a GE plant. Therefore the GM process itself is highly mutagenic and can cause the plants to make chemicals that they normally do not make --- with completely unpredictable consequences; the claims made about the precision, specificity and safety of plant genetic engineering have no scientific basis..
- iv. I believe that the potential negative impact on nutritional content and the increase in dangerous metabolites (chemicals) are the major hazards associated with highly mutagenic plant GM techniques. Although it is widely recognized that the breeding of some crops can produce varieties with harmful characteristics, MILLENNIA OF EXPERIENCE HAVE IDENTIFIED THESE CROPS, AND BREEDERS TEST NEW CULTIVARS FOR KNOWN HARMFUL COMPOUNDS, SUCH AS ALKALOIDS IN POTATOES (Korpan et al., 2004), (Ewen and Pusztai, 1999). IN CONTRAST, UNINTENDED CONSEQUENCES CAUSED BY GM TECHNIQUES OPENS FAR WIDER POSSIBILITIES OF PRODUCING NOVEL, TOXIC OR MUTAGENIC COMPOUNDS IN ALL SORTS OF CROPS. Unlike animals, plants accumulate thousands of nonessential small molecules ----estimates are that they can make between 90,000 and 200,000 unique chemicals with up to 5,000 in one species-- Many of these are known to be HIGHLY TOXIC, CAUSE CANCER, AND CAUSE DISEASES LIKE PARKINSON'S.
- v. There are many examples of unpredictable alterations in chemical metabolism in transgenic organisms. In a yeast strain genetically engineered to increase sugar fermentation, the GM event caused the unintended accumulation of a highly toxic and mutagenic compound. Another well-documented example of unintended effects is the alteration of lignin in Bt corn hybrids derived from Monsanto's MON810 and Syngenta's Bt11 plants, as well as glyphosate-tolerant soybeans. --- Both groups of plants have elevated levels of lignin, an abundant non-digestible woody component that makes the plants less nutritious for animal feed. ---Components of the

SAME BIOCHEMICAL PATHWAY ALSO PRODUCE BOTH COMPOUNDS THAT HAVE A HIGH NUTRITIONAL VALUE, AND ROTENONE, A PLANT-PRODUCED INSECTICIDE THAT CAUSES PARKINSON DISEASE IN ANIMALS. Because of the unique nature of plant enzymes, it is impossible to predict the products made or lost by plants during the GM process. Without the proper safety testing of the <u>specific</u> GM crop, which has not been properly done with Brinjal, there is the very real possibility that the GM food will cause great harm to human health --- Of utmost importance is the fact that Brinjal in India is one of the major sources of calories for its population, while the Bt corn in the US and elsewhere is mostly used for animal food and its consumption as food is extremely small, less than a percent of total calorie intake.

- vi. There are no mandatory, SAFETY TESTING PROCEDURES IN THE US. THEREFORE THERE IS NO SCIENTIFIC BASIS FOR CLAIMING THAT BT CROPS ARE "PROVEN SAFE TO EAT". --It may take many years before any symptoms of a disease arising from a GM product appear. In the absence of strong epidemiology or clinical trials, any health problem associated with an illness caused by a transgenic food is going to be very difficult, if not impossible, to detect unless it is a disease that is unique or normally very rare.
- vii. The critical issue is that any new GE food crop be properly tested for safety in carefully controlled studies with open public access to all of the data, before it is allowed for environmental release in field trials. This has not been done with GM Brinjal and the crop should not be planted. Once a CROP IS EXTENSIVELY PLANTED THE CONSEQUENCES ARE IRREVERSIBLE BECAUSE THERE IS NO WAY THAT THE GENETIC MATERIAL FROM THESE CROPS CAN BE CONTAINED.

The copy of the opinion of Prof. David Schubert is annexed hereto as **Annexure C 7.**

22. Bt Cotton field trials: The regulator has embarked on a 'free for all'. Hundreds of hybrids, new events and manufacturers and all of them new approvals have been unleashed on to the market in the last few weeks. Even varieties that were banned in AP have been reintroduced. Given the worldwide experience with serious problems emerging with Bt cotton, and this experience being replicated in India in many locations and different States, no comprehensive objective study has been initiated in India by the U of I. Yet, we need to stand back, take a hard look at what is happening on our farms and institute such a study that will objectively look at a range of issues including the Stone socio-economic

report of the "deskilling" of cotton farmers. Furthermore, many reports from the 'field' are being reported to civil society groups including Petitioner No. 1. One of the more worrying aspects is the contamination of foundation seed stock and the disappearance of Non-GM seeds from the market; that farmers are finding it increasingly difficult to source Non-GM cotton seeds. Organic farmers are also increasingly worried about the organic status of the seeds they purchase. Yet India is the largest organic producer of cotton in the world. The Gujarat State Seeds Producers Association in a letter to Petitioner No. 1 says that it filed a Suit in the Gujarat High Court in 2006 contending that their seed stock is contaminated because regulations regarding isolation distance and 'refuges' are just not implemented. If illegal varieties of Bt cotton have been countenanced by the regulator since the inception of Bt cotton, other regulatory safeguards will suffer the same fate, and have been amply documented by the Petitioners.

23. Cotton is insect pollinated; to safeguard against contamination, isolation distances need to be at least several miles to insure no gene flow. When considering gene flow, consideration is required of whether like in India, hybrid crop varieties are being used. Typically, for hybrid breeding, the isolation distance has often been (for traditional, non-GE varieties) doubled or even tripled compared to open pollinated varieties. This does not apply to farmers fields, but to seed breeders (e.g. to prevent non-GMO seed that is bred for sale from being contaminated by gene flow from GE). But it is important to remember that while cotton is hybrid in India, (generally unlike the case in the US) there is therefore, a HIGHER POSSIBILITY OF CONTAMINATION OF THE SEED STOCK BY GENE FLOW IN INDIA FOR COTTON THAN IN THE US. (The Gujarat State Seed Producers Association has reported that its seed stock is contaminated) The Report, "Gone to Seed" documents the contamination of supposedly non-GE seed by GE (for commercialised GE crops), and basically shows that this cannot be prevented once commercialisation happens, as in Canada where the organic canola industry has been destroyed by cross contamination. Therefore,

it is imperative that for biosafety reasons and from the perspective of our farmers, India goes no further with field trials of Bt cotton, apart from the fact that they contravene court Orders. A 'Pause' is imperative also because of the Regulator's stance that the Bt cotton experience provides the required justification for the safety of the Bt transgene. This argument is pivotal to the market approval for a whole range of GM food crops including Bt Brinjal. However, this assumption is thoroughly discredited on scientific grounds.

The letter of the Gujarat State Seed Producers Association is appended as Annexure C8.

- 24. Thus, field trials must be part of an 'end process' of biosafety testing and should therefore follow on from first, other comprehensive and rigorous biosafety test protocols and processes as provided in the Writ Petition and subsequent submissions. It is (also) crucially important that a clearly defined agency conduct scrutiny of GMOs before they are allowed into field trials. And that agency must, to be scientifically reliable, take due account of evidence against a proposed field-trial (Robert Mann).
- 25. The gravest threat is to global ecological damage from the twin threats that face our world: First, of 'climate change' and with it, the unique risks of genetic engineering and its products GMOs. 'Climate Change' after years of cover-up and disinformation is now headlined everyday. There is broad consensus between Governments on what this means: preventing more than 2 degrees Celsius of warming above pre-industrial levels. This is the ROLLBACK and with it, some of the more dire consequences may be avoided but not without. On the other hand, the greatest danger posed by GE is that globally, we are being subjected to the same spin as climate change was for years. This time however, every action that releases untested GMOs, takes us to the brink. Today, in India, we stand 'on the brink' with the current approvals of GM field trials, with particular emphasis on LSTs of Bt brinjal. A ROLLBACK WILL NOT BE

POSSIBLE. Contamination from field trials and their impacts on biodiversity will be

irreversible. This is the accepted science. Clearly, such a position is perverse,

untenable, and without justification. It is also a matter of great perplexity that

public interest can be allowed to be drowned by corporate power. It is the

Petitioners' case that this Writ Petition cannot be allowed to fall by the way side

for these reasons. The GEAC's reckless rush into GM foods unless checked will

have impacts on our farmers, their crop choices, our food and health, our wild

places and our countryside in perpetuity. Truly we need sense and it would

appear, an uncommon sense: the precautionary principle and sound science

must prevail in the debate over GE to ensure the safety of consumers and the

environment. It truly presents the gravest global threat alongside 'climate

change'.

It is therefore prayed that during the pendency of the accompanying writ petition, this

court may be pleased to:

PRAYER

a) initiate contempt proceedings against the contemnors/respondents for

wilfully and deliberately disobeying the orders of this Hon'ble Court dated

22nd September 2006, 8th May, 2007 and 1st August, 2007;

b) pass any other or further order/s as this Hon'ble Court may deem fit and

proper in the facts and circumstances of the case.

PETITIONERS

THROUGH: PRASHANT BHUSHAN

COUNSEL FOR THE APPLICANTS

NEW DELHI

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