MINUTES OF 361st SPECIAL MEETING OF REGISTRATION COMMITTEE (RC) HELD ON 22.12.2015 IN COMMITTEE ROOM NO. 1 GROUND FLOOR, ICAR, KRISHI BHAWAN, NEW DELHI

The 361st Special Meeting of Registration Committee (RC) was held under the Chairmanship of Dr. J.S. Sandhu, Deputy Director General (Crops Science) & Chairman of RC on 22.12.2015 at 0930 hrs. in the Committee Room No. 1, Ground Floor, ICAR, Krishi Bhawan, New Delhi. Dr. S. N. Sushil, Plant Protection Adviser, Dr. P. K. Chakraborty, ADG (PP), ICAR, Dr. Shalini Chawla, Professor, Maulana Azad Medical College, Dr. K.K. Sharma, Project Coordinator, MPRNL, and Dr. B.S. Phogat, Addl. Plant Protection Adviser & Secretary (CIB&RC) attended the meeting. Following officers from the Secretariat of CIB&RC were also present to assist the Committee:-

1. Dr. Sushil K. Khurana, Consultant (Pathology)
2. Dr. Sandhya Kulshreshtha, Consultant (Pharmacology)
3. Dr. (Mrs.) Sarita Bhalla, Spl. Grade-I
4. Dr. Harish Chandra, JD(E)
5. Dr. D.P. Nagdeve, JD(WS)
6. Sh. Hari Om Miglani Sr. Law Officer
7. Mr. Dipankar Bhattacharya, DD(Chem)
8. Mr. Subhash Chand, DD (Chem)
9. Dr. Vasudha Gautam, AD(Ento)
10. Mr. Abhishek, AD (Chem)
11. Mr. Niraj Kulshrestha, Law Officer

At the outset, the Chairman welcomed the Members and requested APPA & Secretary (CIB&RC) to take up the agenda, item-wise, for discussions.

Agenda Item No. 3.0 Government Business (Head 3.0)
Agenda item No. 3.1  Consideration of report of the Expert Committee under the Chairmanship of Dr. anupam Verma to review 66 pesticides which are currently banned/restricted/withdrawn in one or more countries but continue to be registered in the country:

Decision of the committee:

The Committee belaud the efforts of the Expert Committee in collecting and collating the mammoth information on the 66 molecules from all possible corners. The Chairman profusely applauded Dr. Jasveer Singh, DD(Ent), Member Secretary of the Committee and the entire committee for providing this beautiful recommendation in inching closer greener and safer foods and environment. Each recommendations were deliberated in detail and following decisions were taken by the RC:-

General recommendations :

1. Each pesticide should be reviewed at ten years interval after registration.
2. All the deemed to be registered pesticides (DRP) need to be re-evaluated for their bio-efficacy and residue data against major target pests as per approved label claims and baseline toxicity data may be generated by the registrants by December 2017; otherwise the Certificate of Registration will be treated as deem cancelled w.e.f 1st January2018
3. State Agricultural Universities (SAU) need to be advised to include pesticides as per the approved label claims by Registration Committee in their recommendations to the farmers.
4. A system should be developed for monitoring of resistance/resurgence in target pests for the commonly used pesticides; for this funds may be provided by the DAC/DPPQS.
5. Pesticide sprays should be preferably avoided during active foraging period of honeybees.
6. For the safety of the users, gloves and masks should be provided with each pesticide pack.
7. For pesticides which are applied in Ultra Low Volume (ULV), clear instructions should be given to use Personal Protective Equipment (PPE).

8. Children and pregnant women should not be exposed to pesticides.

9. The health status of the workers directly and indirectly exposed to the pesticides in manufacturing, handling and packaging in the premises may be submitted to the regulatory authorities on annual basis.

10. There is a need to improve labels on the packing, particularly cautionary information which may be given prominently.

11. There is a need to re-examine and improve the packaging/container of the pesticides so that these are not re-usable for domestic use as water bottle, food storage, etc.

12. Ethylene Thio Urea (ETU) content should not be more than 0.5% in dithiocarbamate pesticides. It requires strict monitoring by the manufacturer for each batch of technical and record to be maintained.

13. Studies suggested by the Review committees should be completed on time-line basis by the Industry/ Pesticide Associations.

14. Workshops should be organized to train medical personnel serving at grass root level to treat poisoning patients.

15. Cautioning statement is to be incorporated, if the pesticides under use are photosensitive.

16. All I a & I b pesticides of WHO hazards category should be kept under strict surveillance of state Governments and status report be obtained from time to time.

17. Comments on UNEP reports on banned/restriction status of pesticides already registered in our country may be presented every year in January by the Secretariat of CIB&RC to Registration Committee/DACFW.

18. Audit of ill effects of pesticides on human health should be carried out by State Governments through Govt. run medical colleges.

The committee has given some of the recommendations on the 66 pesticides, which is enumerated in the table. All the recommendations were critically examined, discussed and decided as under:
<table>
<thead>
<tr>
<th>S. No.</th>
<th>Name of the Pesticide</th>
<th>Observations of the Review Committee</th>
<th>Recommendations</th>
<th>Decision of RC</th>
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<tbody>
<tr>
<td>1.</td>
<td>Acephate (Insecticide)</td>
<td>1. Acephate is a systemic and contact action insecticide registered during 1986 and currently approved for the control of insect pests in cotton, safflower and rice crops under the Insecticides Act, 1968. 2. It is banned in 10 countries (including EU) and currently in use in 55 countries. 3. Degraded product Methamidophos is more toxic than the parent compound. However, studies show that only up to 11% parent compound degrades to Methamidophos and its half life is &lt; 3 days. 4. Acephate was detected in one sample above MRL and methamidophos was not detected above MRL in any of the 28038 samples analyzed by AINPPR, IARI, New Delhi for monitoring of pesticide residues in fruits and vegetables. 5. TNAU, Coimbatore has reported that repeated application causes resurgence of BPH (Nilaparvata lugens) in rice; red spotted spider mite (Tetranychus cinnabarinus, T. urticae) in cotton and brinjal; muranai mite (Polyphagotarsonemus latus) in chilli. PAU, Ludhiana has reported resurgence of whitefly and American bollworm in cotton. 6. It is highly toxic to honey bees. 7. It is classified as ‘moderately hazardous’ under class II (WHO classification, 2009).</td>
<td>1. Resurgence studies need to be carried out on rice and cotton by the Industry/ Pesticide Associations. Reports of the studies should be submitted by December 2017. 2. Since it is toxic to honey bees, spray applications should be avoided during the foraging period of bees. 3. Use of Acephate is recommended to be continued, and to be reviewed in 2018.</td>
<td>The Committee accepted the recommendations and decided as under: (i) The Certificate of Registration of technical and its formulation deemed to be invalid w.e.f. from 1st January, 2018 if studies as recommended by the Expert Committee is not submitted by December, 2017. (ii) A warning may be incorporated in the label &amp; leaflet stating that this product is toxic to honey bees so do not spray during active honeybees foraging period of the day.</td>
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<td>2.</td>
<td>Alachlor (Herbicide)</td>
<td>1. Alachlor is a pre-emergence herbicide registered before 1972 (DRP) and currently approved for the control of weeds</td>
<td>1. Considering the environmental and human</td>
<td>The Committee accepted the recommendations and</td>
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in cotton, maize, groundnut and soybean crops under the Insecticides Act, 1968.

2. It is **banned in four countries (including EU)**, **withdrawn in Australia** and **currently in use in 24 countries**.

3. It is described as a suspected carcinogen. The EPA RED document No. EPA 738-R-98-020 December 1998 summarized that in accordance with the 1996 EPA proposed Guidelines for Carcinogen Risk Assessment, Alachlor was classified as “likely” to be a human carcinogen at high doses, but “not likely” at low doses. However, for ground water concerns Alachlor is classified as a Restricted Use Pesticide (RUP).

4. Alachlor enters drinking water sources through runoff from agricultural plots where it has been applied (http://public.health.oregon.gov/HealthyEnvironments/DrinkingWater/Monitoring/Documents/health/alachlor.pdf). For details see **Annexure – II**.

5. It is reported to persist in soil, pollutes ground water and causes retinal degeneration in rodents. It is likely to be human carcinogen at high doses.

6. It is listed in PIC and classified as ‘moderately hazardous’ under class II (WHO classification, 2009).

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**health hazards the use of Alachlor is recommended to be phased out in five years (by 2020).**


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**decided as under:**

(i) No new certification of registration to manufacture shall be issued after December, 2017.

(ii) No person shall import, manufacture or formulate Alachlor w.e.f. 01/01/2019.

(iii) The use of Alachlor shall be completely banned w.e.f. 31/12/2020.

(iv) All concerned including State Licensing Authorities should be communicated with the above decision of the Registration Committee through public notice and other suitable means.

(v) Product is toxic to aquatic organisms hence, a cautionary statement should be incorporated on label/leaflets “toxic to aquatic organisms hence should not be used near water bodies or pisciculture area”.
### 3. Aluminium Phosphide (Insecticide-Fumigant)

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<tr>
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<th>1. Aluminium phosphide (AlP) is a highly toxic compound.</th>
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<td></td>
<td>2. It is a major fumigant insecticide registered before 1972 (DRP) and approved for the control of stored grain pests in stored whole cereals and seed grains, millets, pulses, dry fruits, nuts, spices, oilseeds and milled products (deoiled cakes, rice bran, flour, grain, animal and poultry food, split pulses and other processed food). In addition, it is also approved to control pests in empty godowns and sheds and for the control of rodents in rodent burrows under the Insecticides Act, 1968.</td>
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<td>3. AlP is also used for quarantine purposes i.e., for pest-free export of agricultural commodities (NSPM 22).</td>
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<td>4. AlP is a restricted use pesticide. As a follow up of Dr. R.B. Singh Committee Recommendations to prevent misuse, the production, marketing and use of tube packs with capacity of 10 and 20 tablets of 3 g each of AlP are not permitted in India. At present 56% 10 g pouch, 15% 12 g tablet and 77.5% Granule formulations are registered to avoid misuse.</td>
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<td>5. Warning statement “Do not use for fumigation of residential premises and cattle sheds” has been incorporated on labels and leaflets. However, the size of the font used for this warning is very small and given in running text, which is difficult to read (Annexure – II).</td>
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<td>6. AlP is banned in Korea, restricted in six countries due to toxicity concerns and currently in use in 63 countries.</td>
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<td>7. To implement Dr. R. B. Singh Committee recommendations except S.No.4 and decided as under:</td>
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<td>(i) The approved doses need to be harmonized to give the doses based on the volume of the commodity/storage structure only, as AlP is used as a fumigant.</td>
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<td>(ii) Effective treatments are available for accidental poisoning by aluminium phosphide but there is an urgent need to complete the study to develop antidote to treat the poisoning cases. This study should be completed latest by December 2017.</td>
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<td>(iii) The persons using Aluminium phosphide in godowns should be well trained for safe use of this toxic pesticide.</td>
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<td>(iv) Label needs improvement; provide pictures of a masked face</td>
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|   | The Committee accepted the recommendations except S.No.4
recommendation, apparently a study on developing antidote was undertaken at AIIMS, New Delhi but its findings are not known.

8. SAU’s have confirmed the efficacy of AIP, but the claims and doses recommended by some SAU’s are not in conformity with CIB & RC recommendations.

9. In case of poisoning, treatment consisting of gastric lavage with potassium permanganate solution, oral administration of charcoal and sorbitol suspension, intravenous administration of sodium bicarbonate, magnesium sulphate and calcium gluconate, and oral administration of sodium bicarbonate and coconut oil is suggested (Shadnia et al., 2005). In another article use of magnesium sulfate, N-acetyl cysteine (NAC), glutathione, vitamin C and E, beta-carotenes, coconut oil and melatonin is suggested (Moghadamnia, 2012). For details see Annexure – III.

10. Aluminium phosphide (fumigant) is not classified by hazard (WHO classification, 2009).

11. Aluminium phosphide is a very effective fumigant for protecting stored grains from insect pests and for use in quarantine.

Aluminium phosphide (fumigant) is not classified by hazard (WHO classification, 2009).

4. Atrazine (Herbicide)

1. Atrazine is a selective, systemic, pre-emergence and early post emergence herbicide registered before 1972 (DRP) and approved for the control of weeds in maize crop under the Insecticides Act, 1968.

with green ‘√’ mark and a house and cattle shed with red cross.

5. Warning statement on label and leaflets should be separate from the running text in bold letters and in large font size.

6. In large warehouses applicators should use mask with oxygen supply; or preferably, a suitable fumigator may be used for Aluminium phosphide application in warehouses.

7. Use of Aluminium phosphide is recommended to be continued.


The Committee accepted the recommendations and decided as under:

Ground water contamination and adverse effect in fish culture are the
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<td>2.</td>
<td>It is <strong>banned in 14 countries</strong>, <strong>restricted in six countries</strong> (including EU), <strong>withdrawn in Switzerland</strong> and <strong>currently in use in 43 countries</strong>, which includes Australia, Canada, China, Japan and USA.</td>
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<td>3.</td>
<td>Atrazine has been reported to be persistent in soil and water bodies (streams, rivers and ground water) and to cause a variety of adverse effects in fish (Cox, 2001) (Annexure – II). Thus ground water contamination and adverse effect in fish culture are the major concerns. The committee is surprised that it took nine years to initiate studies to address the concerns pointed out by Dr. C.D. Mayee Committee (2006). The pesticide association informed that studies on leaching of Atrazine in soil under maize/ sugarcane cultivation under different agro-climatic regions of India have started in June 2014 and studies are in progress at IARI Regional Research Station, Karnal; MPKV, Rahuri and UAS, GKVK, Bangalore under IARI, New Delhi as nodal coordinating centre.</td>
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<td>4.</td>
<td>Regarding the effect on aquatic toxicity, multi-location field studies to assess the impact of atrazine spray on aquatic organism, common carp (Cyprinus carpio), has been conducted by National Bureau of Fish Genetic Resources (NBFGR), Lucknow (UP). Report is awaited.</td>
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<td>5.</td>
<td>It is classified as ‘<strong>slightly hazardous</strong>’ under class III (WHO classification, 2009).</td>
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<td>major concerns. The report of the study on leaching should be made available latest by December 2017.</td>
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<td>2. Data on waiting period on maize should also be generated latest by December 2017.</td>
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<td>3. Atrazine ‘not to use in aquaculture/pisciculture areas’</td>
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<td>4. <strong>Use of Atrazine is recommended to be continued and to be reviewed in 2018.</strong></td>
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<td>(i) Both the studies have been initiated on the basis of CD Mayee committee recommendations. The Certificate of Registration of technical and its formulation deemed to be invalid w.e.f. from 1st January, 2018 if studies as recommended by the Expert Committee is not submitted by December, 2017.</td>
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<td>(ii) A cautionary statement has to be incorporated in the label and leaflet that Atrazine is toxic to aquatic organism, hence should not be used near Water bodies, aquaculture or pisciculture area.</td>
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<td>(iii) The pesticides needs to be re-evaluated for their bio-efficacy and residue data against major target pests as per approved label claims and baseline</td>
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| 5. | **Benfuracarb**  
(Insecticide) | 1. Benfuracarb is a systemic, contact and stomach action insecticide registered during 2004 and approved for the control of insect pests in rice and red gram crops under the Insecticides Act, 1968.  
2. It is **restricted in Korea** due to high acute toxicity and classified as highly hazardous. It is currently in use in 23 **countries**, including Brazil, China, Japan and USA.  
3. Research has demonstrated that on hydrolysis and photolysis benfuracarb degrades to carbofuran and carbofuran phenol under natural conditions. Carbofuran is found to be more toxic against root knot nematodes than carbofuran phenol and other photoproducts (Dureja *et al.*, 1990). Carbofuran is reported to be more persistent and toxic than the parent compound (Iesce *et al.*, 2006). For details see  
| 1. Benfuracarb degrades to Carbofuran, which is shown to be an effective nematicide. Pesticide industry should generate data on the efficacy of Benfuracarb in managing nematodes by December 2017.  
2. **Use of Benfuracarb is recommended to be continued, and to be** toxicity data may be generated by the Industry Associations by December, 2017 otherwise the Certificate of Registration of the product deem cancelled w.e.f. 1st Jan 2018.  
(iv) The residue/persistence data require to be generated by Industry Association for fixation of waiting period for maize crop.  
| The Committee accepted the recommendations and decided as under:  
(i) The Certificate of Registration of technical and its formulation deemed to be invalid w.e.f. from 1st January, 2018 if studies as recommended by the Expert Committee is not submitted by December, 2017.  
(ii) A warning may be
## 6. Benomyl (Fungicide)

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<td>1.</td>
<td>Benomyl is a systemic fungicide registered during 1976 and approved for the control of diseases in wheat, groundnut, tobacco, grapes, beans, cucurbits, chillies, brinjal, sugar beet and peas under the Insecticides Act, 1968.</td>
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<tr>
<td>2.</td>
<td><strong>It is restricted in Bulgaria and Sweden and withdrawn in EU, Australia, New Zealand and banned in US and currently in use in five countries</strong> including China, Philippines and Thailand.</td>
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<td>3.</td>
<td><strong>It is reported that it has a long environmental persistence, suspected human carcinogen and highly toxic to aquatic and soil dwelling organisms (Elsalahi <em>et al.</em>, 2015). Benomyl also has some negative effects on mitotic divisions in onion root tip cells (Dane and Dalgic, 2005). It is reported to lead to foetal eye defects and brain malformation in</strong></td>
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**reviewed in 2018.**

(Reference: ECR, Volume-III, pages:31-38)

**incorporated in the label leaflet stating that this product is toxic to honey bees so do not spray during active honeybees foraging period of the day.**

(iii) A cautionary statement has to be incorporated in the label and leaflet that product is toxic to aquatic organism, hence should not be used near Water bodies, aquaculture or pisciculture area.

1. **Use of Benomyl is recommended to be banned.**

(Reference: ECR, Volume-IV, pages:1-16)

The Committee accepted the recommendations and decided as under:

(i) The registration, import and manufacture is prohibited henceforth and its use is completely banned w.e.f. 1st Jan 2018.

(ii) A cautionary statement has to be incorporated in the label and leaflet that Benomyl is toxic to aquatic
experimental animals. In a case, in the US, a court awarded damages to a spray victim and the marketing company DuPont was held responsible. The company paid 99.5% of $4 million claim to the victim (http://www.ecochem.com/ENN_costillo.html). For details see Annexure – III.

4. It is listed in PIC and classified as ‘unlikely to present acute hazard in normal use’ under class U (WHO classification, 2009).

7. **Bifenthrin** *(Insecticide)*

| 1. | Bifenthrin is an insecticide registered during 2003 and approved for the control of insect pests in cotton, rice, tea and apple crops; for the control of wood borer (powder post beetle) in plywood, veneer and wood and termite control in pre and post construction buildings under the Insecticides Act, 1968. |
| 2. | It is banned in Netherlands and Russia and currently in use in 57 countries including Australia, USA and EU. |
| 3. | Dr. C.D. Mayee Committee recommended that it should not be used in the area where pisciculture/ aquaculture are practiced. |
| 4. | The Netherlands authorities banned Bifenthrin in 2001 |

1. Since Bifenthrin is toxic to fish and honey bees, it should not be used in the area where pisciculture/ aquaculture are practiced and during foraging period of honey bees. **The use of Bifenthrin is recommended to be continued.**

The Committee accepted the recommendations and decided as under:

(i) A cautionary statement may be incorporated in the label leaflet stating that this product is toxic to honey bees so do not spray during active honeybees foraging period of the day.

(ii) A cautionary statement

organism, hence should not be used near Water bodies, aquaculture or pisciculture area.

(iii) The product is teratogenic and foetotoxic hence following warning statement on the label and leaflet should be incorporated “It is foetotoxic and teratogenic hence pregnant women to avoid contact with the product”
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<td></td>
<td>considering it as highly toxic compound to water organisms, persistence in soil and water and bioaccumulation. However, the PBT (persistence, bioaccumulative and toxic) working group of the Technical Committee on New and existing Substances evaluated Bifenthrin under the EU 98/8 Biocide Directive and concluded that Bifenthrin is persistent and toxic but the substance is not bioaccumulative. For details see Annexure – II.</td>
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<td>5. It is toxic to fish and honey bees.</td>
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<td>6. It is reported that Bifenthrin is not likely to reach groundwater because it binds tightly to soil. However, soil bound Bifenthrin has the potential to contaminate surface waters through run off (<a href="http://npic.orst.edu/">http://npic.orst.edu/</a> factsheets/ bifgen.html). Annexure – III.</td>
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<td></td>
<td>8. It is classified as ‘moderately hazardous’ under class II (WHO classification, 2009).</td>
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<td>8.</td>
<td>Butachlor (Herbicide)</td>
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<td>1. Butachlor is a herbicide registered before 1972 (DRP) and approved for the control of weeds in paddy crop under the Insecticides Act, 1968.</td>
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<td>2. It is restricted in Korea and currently in use in 21 countries including Japan, Korea, China and Thailand.</td>
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<td>3. Industry has not completed studies on the effect on aquatic organisms and the extent of leaching of pesticides as</td>
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<td>1. Multi-location field studies on the effect of Butachlor on aquatic organisms and the extent of leaching of pesticide must be completed by December 2017.</td>
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<td>(i)The Committee accepted the recommendations of the Expert Committee and noted that the studies that recommended by the Expert Committee has already been submitted to</td>
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<td>(Reference: ECR, Volume-II, pages:19-31)</td>
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<td>has to be incorporated in the label and leaflet that Bifenthrin is toxic to aquatic organisms, hence should not be used near Water bodies, aquaculture or pisciculture area.</td>
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<td><strong>Minutes of 361st Special Meeting of RC held on 22nd December, 2015.</strong></td>
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<td>4. Butachlor is shown to inhibit <em>Nostoc</em> sp. (He <em>et al.</em>, 2013).</td>
<td><strong>2. Use of Butachlor is recommended to be continued, and to be reviewed in 2018.</strong></td>
<td>the satisfaction of RC, hence decided that the use of Butachlor is to be continued.</td>
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<td>5. It is stated to be probably/likely carcinogen by EPA, US.</td>
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<td>(ii) The pesticides needs to be re-evaluated for their bioefficacy and residue data against major target pests as per approved label claims and base line toxicity data may be generated by the Industry Associations by December, 2017 otherwise the Certificate of Registration of the product deem cancelled w.e.f. 1st Jan 2018.</td>
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<td>6. It is classified as ‘slightly hazardous’ under class III (WHO classification, 2009).</td>
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<td>(iii) A cautionary statement has to be incorporated in the label and leaflet that Butachlor is toxic to aquatic organism, hence should not be used near Water bodies, aquaculture or pisciculture area.</td>
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**Recommended by Dr. C.D. Mayee Committee (2006).**
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<tr>
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<th>Captan (Fungicide)</th>
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<td>1.</td>
<td>Captan is a fungicide registered before 1972 (DRP) and approved for the control of diseases in chillies, potato, apple, cherry, grapes, tomato, cabbage, cauliflower, brinjal, beans, citrus, paddy, tobacco, rose and other ornamentals under the Insecticides Act, 1968.</td>
<td>1.</td>
<td>Data on waiting period, residues toxicity and environment contamination and carcinogenicity to be generated by the Industry/Pesticide Associations and reports should be submitted latest by December 2017.</td>
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<td>2.</td>
<td>It is banned in Denmark, Fiji and Korea; restricted in Australia, Kuwait and Sweden; withdrawn in Finland and Norway and currently in use in 55 countries including Brazil, China, USA, UK and Russia.</td>
<td>2.</td>
<td>Use of Captan is recommended to be continued, and to be reviewed in 2018.</td>
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<td>3.</td>
<td>Captan is a useful fungicide, which is widely used in many crops. However, information on waiting period for many crops is not available.</td>
<td>(Reference: ECR, Volume-III, pages:45-62)</td>
<td>The Committee accepted the recommendations and decided as under:</td>
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<td>4.</td>
<td>Dr. R.B. Singh Committee (1999) recommended that the registrant of the product should be asked to generate carcinogenicity data on Captan as per OECD Guidelines and to submit to RC within five years. But the study has not been submitted.</td>
<td>(i)</td>
<td>The Certificate of Registration of technical and its formulation deemed to be invalid w.e.f. from 1st January, 2018 if studies as recommended by the Expert Committee is not submitted by December, 2017 except for carcinogenicity study which may be submitted by Dec 2018.</td>
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<td>5.</td>
<td>Captan residue in surface lake water in Bijapur (Karnataka) was found as 0.02 mg/L in one lake sample out of 7 samples collected and it was at par with EU MRL (Pujeri et al., 2010). For details see Annexure – II.</td>
<td>(ii)</td>
<td>The pesticides needs to be re-evaluated for their bio-efficacy and residue data against major target pests as per approved label claims and baseline toxicity data may be generated by the Industry Associations by December, 2017 otherwise the Certificate of Registration of the product deem cancelled w.e.f. 1st Jan</td>
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<td>6.</td>
<td>It is classified as ‘unlikely to present acute hazard in normal use’ under class U (WHO classification, 2009).</td>
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<td>10.</td>
<td><strong>Carbaryl</strong> (Insecticide)</td>
<td><strong>The use of Carbaryl is recommended to be banned.</strong></td>
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<td></td>
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<td>(Reference: ECR, Volume-IV, pages:17-42)</td>
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<td>The Committee accepted the recommendations and decided as under:</td>
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<td></td>
<td>(i) The registration, import and manufacture is prohibited henceforth and its use is completely banned</td>
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<td></td>
<td>1. Carbaryl is an insecticide registered before 1972 (DRP) and approved for the control of insect pests in paddy, cotton, sorghum, bhindi, cabbage, cauliflower, maize, sesameum, jute, tomato, chillies, brinjal and wheat crops under the Insecticides Act, 1968.</td>
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<td></td>
<td>2. It is <strong>banned in seven countries (including European community), restricted in Russian Federation</strong> and <strong>currently in use in 31 countries</strong> including Australia, Japan</td>
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<td>(iii) The residue/persistence data require to be generated by Industry Association for fixation of waiting period for cherry, tomato, cabbage, cauliflower, brinjal, beans, citrus, rose, paddy and tobacco crop.</td>
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<td>(iv) A cautionary statement has to be incorporated in the label and leaflet that Captan is toxic to aquatic organism, hence should not be used near Water bodies, aquaculture or pisciculture area.</td>
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Minutes of 361st Special Meeting of RC held on 22nd December, 2015.
and USA.
3. Bayer has announced to quit production of the highly dangerous pesticides Aldicarb and Carbaryl, which use (Bhopal tragedy chemical) methyl isocyanate (MIC) as a key ingredient (http://www.cbgnetwork.org/3650.html and http://beyondpesticides.org/dailynewsblog/2011/01/bayer-to-stop-producing-toxic-chemical-that-caused-bhopal-disaster/). For details see Annexure – II.
4. It is not in current use in India.
5. It is highly toxic to bees.
6. It is shown to be of occupational hazard.
7. Methyl isocyanate (MIC), which is a key ingredient in the production of carbaryl technical is a highly toxic compound.
8. EPA US has classified carbaryl as probably/ likely carcinogen.
9. It is classified as ‘moderately hazardous’ under class II (WHO classification, 2009).

| 11. Carbendazim (Fungicide) | 1. Carbendazim is a fungicide registered before 1972 (DRP) and approved for the control of diseases in paddy, grapes, mango, wheat, barley, tapioca, cotton, jute, groundnut, sugar beet, peas cluster, beans, cucurbits, brinjal, apple, walnut, ber and rose under the Insecticides Act, 1968.  
2. It is restricted in Sweden and currently in use in 39 countries including China, Japan, Australia and UK.  
3. APEDA has commented that Carbendazim is used on paddy mainly to control the incidence of neck blast and in last | 1. The labeling guidelines need to be followed strictly.  
2. Residue data need to be generated where waiting period is not defined, including rice to address the concerns of residue in rice export. Industry/ Pesticide The Committee accepted the recommendations and decided as under:  
(i) The Certificate of Registration of technical and its formulation deemed to be invalid w.e.f. 1st January, 2018 if studies as |
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<td>couple of years consignments sent to EU and USA were rejected due to detection of residues exceeding the MRL (default level 0.01 mg/kg). AIREA has proposed that recommendation of carbendazim on rice may be discontinued/withdrawn as Isoprothiolane and Tricyclazole are available as alternatives. Accordingly APEDA has requested that the proposal for withdrawing the recommendations of Carbendazim on rice may be examined technically and appropriate action may be taken for change in the package of practices.</td>
</tr>
<tr>
<td></td>
<td>Associations should submit report latest by December 2017.</td>
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<td></td>
<td><strong>3. Use of Carbendazim is recommended to be continued, and to be reviewed in 2018.</strong></td>
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<tr>
<td></td>
<td>(Reference: ECR, Volume-III, pages:63-76)</td>
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<td></td>
<td>recommended by the Expert Committee is not submitted by December, 2017.</td>
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<td></td>
<td>(ii) A condition has to be incorporated on Certificate of Registration that impurities of 2,3 diaminophenazine (DAP) and 20amino-3-hydroxyphenazine (HAP) should not be more than 0.003 g/kg and 0.0005 g/kg in the technical grade pesticide.</td>
</tr>
<tr>
<td></td>
<td>(iii) The pesticides needs to be re-evaluated for their bio-efficacy and residue data against major target pests as per approved label claims and baseline toxicity data may be generated by the Industry Associations by December, 2017 otherwise the Certificate of Registration of the product deem cancelled w.e.f. 1st Jan</td>
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<td></td>
<td>4. For most of the crops waiting period is not defined.</td>
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<td>5. Studies carried out for assessment of residues in northern India during three years showed that carbendazim in rice grains, soil and irrigation water was below the detectable level (&lt;0.01 mg/kg) (Arora et al., 2014). It is also reported that process of cooking reduced the Carbendazim content significantly in cereals and pulses (Karunambigai et al., 2012). For details see Annexure – II.</td>
</tr>
<tr>
<td></td>
<td>6. Carbendazim has been classified as ‘unlikely to present acute hazard in normal use’ under class U (WHO classification, 2009).</td>
</tr>
</tbody>
</table>
12. **Carbofuran** (Insecticide)  

1. Carbofuran is an insecticide registered before 1972 (DRP) and approved for the control of insect and nematode pests in barley, bajra, sorghum, jute, groundnut, French bean, potato, tomato, apple, citrus, maize, paddy, mustard, soybean, sugarcane, bhindi, chillies, cabbage, wheat, brinjal, banana, peach, mandarins, pea and tea crops.  
2. It is an effective pesticide for the management of nematodes and other pests. However it is a highly toxic compound.  
3. It is **banned in eight countries, restricted in six countries** and **currently in use in 35 countries** including Brazil, Russia and USA.  
4. Dr. R.B. Singh Committee (1999) recommended banning of Carbofuran 50% SP formulation and to phase out its 3% GR formulation by 2005 due to problems of hazards to human being and availability of suitable alternatives. Following the decision Carbofuran 50% SP formulation has been banned for import, manufacture and use.  
5. Information on waiting period for many crops is not available.

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<tr>
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<tr>
<td>(iv) A warning statement on label leaflet should be included as under “it has foetotoxic and teratogenic potential- pregnant women to avoid contact with the product”.</td>
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<thead>
<tr>
<th>2018.</th>
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<tr>
<td>(i) The Certificate of Registration of technical and its formulation deemed to be invalid w.e.f. from 1st January, 2018 if studies as recommended by the Expert Committee is not submitted by December, 2017.</td>
</tr>
<tr>
<td>(ii) A warning may be incorporated in the label leaflet stating that this product is toxic to honey bees so do not spray during active honeybees foraging period of the day.</td>
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<th>2018.</th>
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<tr>
<td>1. The producer should provide hand gloves with the packing to avoid exposure of farmers to this toxic compound.</td>
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<tr>
<td>2. Residues data need to be generated by the Industry/Pesticide Associations, on approved crops as waiting period is not defined. The study should be completed by December 2017.</td>
</tr>
<tr>
<td>3. Use of Carbofuran is recommended to be continued, and to be reviewed in 2018.</td>
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The Committee accepted the recommendations and decided as under:
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<tr>
<td>6.</td>
<td>It is highly toxic to honey bees and listed in PIC.</td>
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<tr>
<td>7.</td>
<td>A combination of atropine and memantine is reported the most effective antidotal treatment against carbofuran acute toxicity (Gupta, 1994). It has been reported that photo-irradiation markedly reduce the toxicity of carbofuran as compared to non-irradiation in case of common Asian toad and stated to be cautioned to directly link results of empirical trials to field scenarios (Wijesinghe <em>et al.</em>, 2011). For details see Annexure – II.</td>
</tr>
<tr>
<td>8.</td>
<td>It is classified as ‘highly hazardous’ under class Ib (WHO classification, 2009).</td>
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<tr>
<td></td>
<td>(Reference: ECR, Volume-III, pages:77-92)</td>
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<td></td>
<td>(iii) The pesticides needs to be re-evaluated for their bio-efficacy and residue data against major target pests as per approved label claims and baseline toxicity data may be generated by the Industry Associations by December, 2017 otherwise the Certificate of Registration of the product deem cancelled w.e.f. 1st Jan 2018.</td>
</tr>
<tr>
<td></td>
<td>(iv) The residue/persistence data require to be generated by industry association for fixation of waiting period for Bajra, Barley, Sorghum, Jute, Groundnut, French bean, Potato, Tomato, Apple, Citrus, Maize, Paddy, Mustard, Soybean, Sugarcane, Bhindi, French bean, Chillies, Cabbage, Wheat, Brinjal, Banana, Peach, Mandarins, Pea &amp; Tea crops.</td>
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<td>(v) A cautionary statement</td>
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13. **Carbosulfan**  
(Insecticide)

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<td><strong>1.</strong> Carbosulfan is an insecticide registered before 1972 (DRP) and approved for the control of insect pests in rice, chili and cotton crops under the Insecticides Act, 1968.</td>
<td><strong>1.</strong> Since Carbodulfan is toxic to honey bees, spray applications should be avoided during the foraging period of bees.</td>
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<tr>
<td><strong>2.</strong> It is <strong>banned in 10 countries including Panama and Malaysia, restricted in Belize, withdrawn in EU and currently in use in 44 countries including Australia, Brazil, Israel and Japan.</strong></td>
<td><strong>2.</strong> <strong>The use of Carbosulfan is recommended to be continued.</strong></td>
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<tr>
<td><strong>3.</strong> Some recent findings have also demonstrated efficacy of carbosulfan in managing insect pests (Baruah <em>et al.</em> 2008, Hole <em>et al.</em>, 2013). For details see Annexure – II.</td>
<td>(Reference: ECR, Volume-II, pages:32-39)</td>
<td></td>
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<tr>
<td><strong>4.</strong> It is highly toxic to honey bees.</td>
<td>The Committee accepted the recommendations</td>
<td></td>
</tr>
<tr>
<td><strong>5.</strong> It is classified as '<strong>moderately hazardous</strong>' under Class II (WHO classification, 2009).</td>
<td>(i) A warning may be incorporated in the label leaflet stating that this product is toxic to aquatic organisms hence should not be used near water bodies, aquaculture/pisciculture area.</td>
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<td>(vi) A cautionary statement has to be incorporated in the label and leaflet that product is highly toxic to birds.</td>
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1. Since Carbodulfan is toxic to honey bees, spray applications should be avoided during the foraging period of bees.
2. **The use of Carbosulfan is recommended to be continued.**

Minutes of 361st Special Meeting of RC held on 22nd December, 2015.

2. It is **banned for use in agriculture in EU** and label claims and base line toxicity data may be generated by the Industry Associations by December, 2017 otherwise the Certificate of Registration of the product deem cancelled w.e.f. 1st Jan 2018.  
(iii) A cautionary statement has to be incorporated in the label and leaflet that product is very toxic to aquatic organisms hence should not be used near Water bodies, aquaculture/pisciculture area.  
(iv) A cautionary statement has to be incorporated in the label and leaflet that product is very toxic to birds.  
1. Since Chlorfenapyr is toxic to honey bees, spray applications should be avoided during the foraging period.  
The Committee accepted the recommendations and decided as under:  
(i) A warning may be |

21
|    | Chlorothalonil (Fungicide) | 1. Chlorothalonil is a fungicide registered during 1989 and approved for the control of diseases in groundnut and potato crops under the Insecticides Act, 1968. | 1. The labels and leaflets should bear the safety precautions that it should not be used in the areas where pisciculture / aquaculture are practiced. |
|    |  | 2. It is slightly toxic to mammals, practically nontoxic to birds and moderately persistent in soil. However, it is highly toxic to fish. | 2. The use of Chlorothalonil is banned in the label and leaflet that product is toxic to aquatic organism hence should not be used near Water bodies, aquaculture/ pisciculture area. |
|    |  | 3. It is classified as possibly carcinogen. | (ii) A cautionary statement has to be incorporated in the label and leaflet that product is highly toxic to birds. |
|    |  | 4. It is currently in use in 90 countries. It is banned in period of bees. | (iii) A cautionary statement has to be incorporated in the label and leaflet that product is toxic to aquatic organism hence should not be used near Water bodies, aquaculture/ pisciculture area. |

The Committee accepted the recommendations and decided as under:

(i) A cautionary statement has to be incorporated in the label and leaflet that product is highly toxic to birds.

(ii) A cautionary statement has to be incorporated in the label and leaflet that product is toxic to aquatic organism hence should not be used near Water bodies, aquaculture/ pisciculture area.

(iii) A cautionary statement has to be incorporated in the label and leaflet that product is toxic to aquatic organism hence should not be used near Water bodies, aquaculture/ pisciculture area.

Suggestions:

- Chlorfenapyr is toxic to honey bees. It is recommended to be continued.
- Chlorothalonil is banned in the label and leaflet that product is toxic to aquatic organism hence should not be used near Water bodies, aquaculture/ pisciculture area.

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1. Chlorothalonil is a fungicide registered during 1989 and approved for the control of diseases in groundnut and potato crops under the Insecticides Act, 1968.
2. It is slightly toxic to mammals, practically nontoxic to birds and moderately persistent in soil. However, it is highly toxic to fish.
3. It is classified as possibly carcinogen.
4. It is currently in use in 90 countries. It is banned in period of bees.
5. It is toxic to honey bees.

Chlorfenapyr is reported to have some negative impact on bees (Chakraborti et al., 2015). For details see Annexure – II.

It is classified as 'moderately hazardous' under class II (WHO classification, 2009).
**Minutes of 361st Special Meeting of RC held on 22nd December, 2015.**

| 16. Chlorpyriphos (Insecticide) | Sweden and Saudi Arabia due to carcinogenic properties. The Rotterdam Convention turned down the proposal of Saudi Arabia as it did not meet the criterions for inclusion in Annex-I.  
5. The recommendations of Dr. C.D. Mayee Committee on safety precautions concerning skin irritation and contact dermatitis have been incorporated on the label and leaflets, but the recommendations for maximum hexachlorobenzene (HCB) and decachlorobiphenyl (DCB) contents in the technical material has not been approved by the Registration Committee.  
6. The product has been found effective to control early blight disease of potato under Kashmir valley conditions (Ganie et al., 2013). For details see Annexure —II.  
7. It is classified as ‘unlikely to present acute hazard in normal use’ under class U (WHO classification, 2009). | Chlorothalonil is recommended to be continued.  
(ii)Safety precautions concerning skin irritation and contact dermatitis as suggested by Dr. C.D. Mayee Committee should continue to be incorporated on label and leaflets. |  
1. Chlorpyriphos is toxic to fish, therefore, it should not be used near Water bodies, aquaculture/ pisciculture area.  
2. Since it is also toxic to honey bees, spray applications should be avoided during the foraging period of bees.  
3. Residue data need to be generated by Industry/organisms hence should not be used near Water bodies, aquaculture/ pisciculture area.  
4. Information on waiting period for many crops is not available.  
5. Chlorpyriphos is highly toxic and has a detrimental effect to many organisms including fish and honey bees.  
6. Chlorpyriphos is recommended to be continued.  
(ii)Safety precautions concerning skin irritation and contact dermatitis as suggested by Dr. C.D. Mayee Committee should continue to be incorporated on label and leaflets. | The Committee accepted the recommendations and decided as under:  
(i) Committee accepted in principle all the five recommendations of Dr. R. Roy Chaudhary as mentioned at Agenda item No. 3.1 of 213 RC meeting minutes.  
(ii) A warning may be incorporated in the label |
impact on the behavioural responses of fish (*Labeo rohita*) (Rao *et al*., 2010). The risk to honey bees being affected by pesticide residues is directly proportional to the prevalence of residues in the environment (SanchezBayo and Goka, 2014). For details see Annexure –II.

6. It is classified as ‘moderately hazardous’ under class II (WHO classification, 2009).

<table>
<thead>
<tr>
<th>Pesticide Associations where waiting period is not defined and reports should be submitted by December 2017.</th>
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<tr>
<td>Use of Chlorpyriphos is recommended to be continued, and to be reviewed in 2018. (Reference: ECR, Volume-III, pages:93-118)</td>
</tr>
<tr>
<td>leaflet stating that this product is toxic to honey bees so do not spray during active honeybees foraging period of the day.</td>
</tr>
<tr>
<td>(iii) A condition has to be incorporated in the label and leaflet that Chlorpyriphos is very toxic to aquatic organisms hence should not be used near Water bodies, aquaculture or pisciculture area.</td>
</tr>
<tr>
<td>(iv) A cautionary statement has to be incorporated in label leaflet that product is toxic to birds.</td>
</tr>
<tr>
<td>(v) The residue/persistence data require to be generated by industry association for fixation of waiting period for Paddy, Beans, Cotton, Apple, Gram, Sugarcane, Cabbage, Ber, Ground nut, Brinjal, Onion, Mustard,</td>
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**17. 2,4-D (Herbicide)**

1. 2,4-D is a herbicide registered before 1972 (DRP) and approved for the control of weeds in maize, wheat, sorghum, potato, sugarcane, citrus, grapes, paddy and in non crop area under the Insecticides Act, 1968.
2. It is banned in Norway, Korea and Kuwait, restricted in Belize and Denmark, withdrawn in Sweden and currently in use in 94 countries.
3. The International Agency for Research on Cancer (IARC) vide Press Release No. 236 dated 23.06.2015 classified 2,4-D as possibly carcinogenic to humans (Group 2B). However, epidemiological studies did not find strong or consistent increases in risk of non-Hodgkin lymphoma (NHL) or other cancers in relation to 2,4-D exposure (Annexure –II).
4. The content of Dioxin which is a by-product of 2,4-D production is carcinogenic and should not exceed above 0.01 mg per kg product.
5. Waiting period is not defined in some approved crops.

Citrus & Tobacco crops.

(vi) The Certificate of Registration of technical and its formulation deemed to be invalid w.e.f. from 1st January, 2018 if studies as recommended by the Expert Committee is not submitted by December, 2017.

1. Residue data also need to be generated by the Industry/ Pesticide Associations, where waiting period is not defined and reports should be submitted by December 2017
2. Use of 2, 4- D is recommended to be continued and to be reviewed in 2018.


The Committee accepted the recommendations and decided as under:
(i) The Certificate of Registration of technical and its formulation deemed to be invalid w.e.f. from 1st January, 2018 if studies as recommended by the Expert Committee is not submitted by December, 2017.
(ii) The content of Dioxin should not exceed above 0.01 mg/kg of the product.
(iii) The pesticides needs
6. Dioxins are a family of chemicals that include the highly toxic TCDD. Current 2,4-D manufacturing practices have reduced dioxin contamination to trace amounts that are below levels of concern to EPA (http://www.oregon.gov/odf/privateforests/docs/24dfactsheet.pdf). For details see Annexure – II.

7. It is classified as ‘moderately hazardous’ under class II (WHO classification, 2009).

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<thead>
<tr>
<th>18. Dazomet (Insecticide-nematicide)</th>
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<tbody>
<tr>
<td>1. Dazomet is an insecticide (nematicide) registered during 2002 and approved for the control of nematodes in tobacco and tomato nurseries and in floriculture (Carnation and Gerbera) under the Insecticides Act, 1968.</td>
</tr>
<tr>
<td>2. It is <strong>banned in Denmark</strong> as assessed to be harmful to unborn child and <strong>currently in use in 44 countries</strong>.</td>
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<tr>
<td>3. Dazomet is reported to be effective against root knot nematode, <em>Meloidogyne incognita</em> and also the weed species namely <em>Echinochloa colonum</em>, <em>Trianthema portulacastrum</em>, <em>Echinochloa crus-galli</em>, and <em>Echinochloa crus-galli</em>.</td>
</tr>
<tr>
<td>1. Label should give caution that it should not be used by pregnant woman.</td>
</tr>
<tr>
<td>2. Use of Dazomet is <strong>recommended to be continued</strong>. (Reference: ECR, Volume-<strong>The Committee accepted the recommendations and decided as under:</strong> (i) <strong>Label leaflet should give cautionary statement that the workers/farmers handling Dazomet should not consume alcohol within</strong></td>
</tr>
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</table>
### DDT (Insecticide)

1. DDT is an insecticide registered before 1972 (DRP) and approved for the control of adult mosquitoes under public health programme and restricted up to 10,000 Metric tonnes per annum except in case of any major outbreak of epidemic.
2. Its use in agriculture has been withdrawn.
3. It is **banned in 39 countries, restricted in 18 countries, withdrawn in New Zealand and currently in use in 22 countries.**
4. DDT was detected in some samples of fruit & vegetables, indicating its mis-use in agriculture leading to contamination of food and feed. Therefore, there is a need to completely ban the use of DDT in India.
5. It is very toxic to aquatic organism, possible carcinogenic to humans (IARC).

### References

1. Considering the highly persistent nature and contamination of food and feed, use of DDT should be banned for all applications in the country.

(Reference: ECR, Volume-IV, pages:43-78)

1. Considering the highly persistent nature and contamination of food and feed, use of DDT should be banned for all applications in the country.

(i) A Communication may be sent to the Ministry of Health and Family Welfare to furnish their comments as the molecule is only used in Public Health Program of Ministry of Health and Family Welfare.

(ii) Label Leaflet should give cautionary statement that exposure to pregnant women should be avoided.

(vi) A cautionary statement has to be incorporated in the label and leaflet that it is toxic to aquatic organisms hence should not be used near Water bodies, aquaculture or pisciculture area.

Gynpondropsis pentaphylla and Dactyloctenium aegyptium in tomato nursery by TNAU, Coimbatore (Indirani and Jayakumar, 2006). It is also used as antibiotic medicine (http://www.howtohint.com) under the trade name Metronidazole (http://www.unilab.com). For details see Annexure – II.

4. It is classified as **‘moderately hazardous’** under Class II (WHO classification, 2009).

5. Dazomet is an effective nematicide for use in nurseries and floriculture.

II, pages:67-73)
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<td>6.</td>
<td>It is listed in Prior informed consent (PIC) and Persistent organic pollutant (POP).</td>
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<tr>
<td>7.</td>
<td>It is reported that the bad impact of DDT on ecology and life in India is only growing by the time, while there seems to be stagnation in its efficacy to arrest the malaria vector (Betne and Rajankar, 2011). The p-p’ DDE, p-p’ DDD and o-p’ DDE; the metabolites of DDT have been reported in the human blood samples collected from Punjab (Bedi <em>et al.</em>, 2015). It has been recently classified by IARC under Group 2A- probably carcinogenic to humans (WHO Press Release No. 236 dated 23.06.2015). For details see Annexure – II.</td>
</tr>
<tr>
<td>8.</td>
<td>It is classified as ‘moderately hazardous’ under class II (WHO classification, 2009).</td>
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<td><strong>20.</strong> Deltamethrin (Insecticide)</td>
<td>1. Deltamethrin is an insecticide registered during 1984 and approved for the control of insect pests in cotton, rice, tea, bhindi, groundnut, mango, chilli, brinjal and red gram crops under the Insecticides Act, 1968. Also approved for the control of stored grain pests in wheat, rice, godowns and to control mosquitoes under public health programme.</td>
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<td></td>
<td>2. It is <strong>restricted in Denmark</strong> and <strong>currently in use in 50 countries.</strong></td>
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<tr>
<td></td>
<td>3. Following the recommendations of Dr. C.D. Mayee Committee for the use of necessary protective clothing/measures, safety precautions have been incorporated on label and leaflets.</td>
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<td></td>
<td>4. Repeated use of Deltamethrin on the same crop (cotton) is the root cause of resurgence/resistance phenomena (Virk <em>et al.</em>, 2004). The risk and benefits of Deltamethrin usage in insect pest control has been reviewed covering various chemical, toxicological, biological, environmental and ecological aspects.</td>
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<tbody>
<tr>
<td>1.</td>
<td>Repeated use on the same crop should be avoided, to avoid resurgence.</td>
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<tr>
<td>2.</td>
<td>Since it is toxic to honey bees, spray applications should be avoided during the foraging period of bees.</td>
</tr>
<tr>
<td>3.</td>
<td>Research should be taken up on the resurgence and resistance in target pests by Industry/Pesticide Associations. Reports of the studies should be submitted</td>
</tr>
<tr>
<td></td>
<td>The Committee accepted the recommendations and decided as under:</td>
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<td>(i) The Certificate of Registration of technical and its formulation deemed to be invalid w.e.f. from 1st January, 2018 if studies as recommended by the Expert Committee is not submitted by December, 2017.</td>
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|   | (ii) A warning may be incorporated in the label leaflet stating that this
### Minutes of 361st Special Meeting of RC held on 22nd December, 2015.

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<td>safety aspects (Kumar, 2007). It is suggested that intermittently use of non-pyrethroid alternative pesticides or combination formulations of pyrethroids with non pyrethroid insecticides having different type of mode of action as per recommendations may limit the resurgence and resistance development in pest populations. For details see Annexure – II.</td>
<td>by December 2017.</td>
<td>product is toxic to honey bees so do not spray during active honeybees foraging period of the day. (iii) A cautionary statement on Label leaflet should be incorporated that repeated use should be avoided to stop resistant development.</td>
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<td></td>
<td>It is highly toxic to bees.</td>
<td>4. Use of Deltamethrin is recommended to be continued, and to be reviewed in 2018. (Reference: ECR, Volume-III, pages:119-146)</td>
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<td></td>
<td>It is classified as ‘moderately hazardous’ under Class II (WHO classification, 2009).</td>
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21. **Diazinon**  
(Insecticide)  

1. Diazinon is an insecticide registered before 1972 (DRP) and approved to control house hold insect pests in houses under the Insecticides Act, 1968. It is banned for use in agriculture.  
2. It is **banned in Denmark, restricted in India and withdrawn in EU and Korea.**  
3. It is highly toxic to honey bees.  
4. It has been reported that diazinon exposure has been associated with an increased risk of brain cancer in children and the cancer non-Hodgkin’s lymphoma in farmers (Cox, 2000). Accidental heavy spray of diazinon has also been resulted in impaired balance, reaction time, colour vision, slotted pegboards and trials making and organic brain dysfunction (Dahlgren et al., 2004). For details see Annexure – II.  
5. It is classified as ‘moderately hazardous’ under class II (WHO classification, 2009), but **according to IARC it is classified under class 2A (probably carcinogenic to humans).**

1. Use of diazinon is already banned in agriculture in India.  
2. **Considering the ‘probably carcinogenic nature to humans’, its use for managing household insects is also recommended to be banned.**  

   (Reference: ECR, Volume-IV, pages:79-88)  

The Committee accepted the recommendations and decided as under:  
(i) The registration, import and manufacture is prohibited henceforth and its use is completely banned w.e.f. 1st Jan 2018.
2. Dichlorvos (Insecticide)

1. Dichlorvos is an insecticide registered before 1972 (DRP) and approved for the control of insect pests in paddy, wheat, soybean, castor, groundnut, mustard, sunflower, cucurbit and cashew under the Insecticides Act, 1968.
2. It is banned in four countries (including EU), restricted in USA, Kuwait and Korea, withdrawn in Angola and Sweden and currently in use in 40 countries.
3. Dr. C.D. Mayee Committee (2006) recommended that manufacturing unit to monitor permissible exposure limit of 1 mg/m$^3$ for 8 hour work day, 40 hour work per week. The industry Associations have already been conveyed to take suitable action, vide F. No. 14-4/2006-CIR.I dated 01.02.2007 and to inform CIB & RC regarding progress, but no information has been provided by the industry.
4. It is reported that high or repeated exposure may damage the nerves causing weakness, “pins and needles,” and poor coordination in the arms and legs; and also personality changes of depression, anxiety or irritability (http://nj.gov/health/eoh/rtkweb/documents/fs/0674.pdf). It is extremely toxic to non target organisms like fish and hampers fish health through impairment of metabolism, sometimes leading to death (Das, 2013).
5. It is toxic to honey bees and also leads to occupational hazard during manufacturing operations.
6. It is classified as ‘highly hazardous’ under class Ib (WHO classification, 2009), and it is possibly carcinogenic to humans as per IARC classification 2B.

1. Use of Dichlorvos is recommended to be phased out in five years (by 2020).

(Reference: ECR, Volume-IV, pages:227-240)

The Committee accepted the recommendations and decided as under:
(i) No new certification of registration to manufacture shall be issued after December, 2017.
(ii) No person shall import, manufacture or formulate Dichlorvos w.e.f. 01/01/2019.
(iii) The use of Dichlorvos shall be completely banned w.e.f. 31/12/2020.
(iv) All concerned including State Licensing Authorities should be communicated with the above decision of the Registration Committee through public notice and other suitable means.
(v) A cautionary statement should be incorporated in the label.
| 23. | **Dicofol**  
(Insecticide-miticide) | 1. Dicofol is an insecticide (miticide) registered before 1972 (DRP) and approved to control mite pests in tea, okra, citrus, litchi, cotton, brinjal, bottle & bitter gourd under the Insecticides Act, 1968.  
2. Mites care emerging as a serious constraints due to environmental changes.  
3. It is **banned in 10 countries, restricted in EU, Korea and Venezuela, withdrawn in Sweden.**  
4. Dr. R.B. Singh Committee recommended to notify the leaflet that product is toxic to birds.  
(vi) It is very toxic to aquatic organisms hence, a cautionary statement should be incorporated on label/leaflet that this product is toxic to aquatic organism hence should not be used near water bodies or pisciculture area.  
(ix) A warning may be incorporated in the label leaflet stating that this product is toxic to honey bees so do not spray during active honeybees foraging period of the day. | The Committee accepted the recommendations and decided as under:  
(i) The Certificate of Registration of technical and its formulation deemed to be invalid w.e.f. from 1st |
permissible limit of Dicofol under PFA by Ministry of Health for individual fruit and vegetable, which has not been done so far.

5. Dicofol is structurally similar to DDT. It is cumulative and persistent in the environment and has a half-life of sixty days. It is reported that Dicofol is only persistent at low levels of pH, 5.5 or less, and that the majority of world’s water bodies have a pH of around 7-8. (http://toxicslink.org/docs/Factsheet-45-on-Dicofol.pdf). For details see Annexure – II.

6. It is classified as ‘moderately hazardous’ under class II (WHO classification, 2009).

need to be generated by the Industry/ Pesticide Associations and report to be submitted by December 2017.

2. Contamination of technical Dicofol with DDT should be less than 0.1%, and total contaminants by DDT and its metabolites should be less than 0.5% and overall purity should be 95% as per the Stockholm Convention. A mechanism should be put in place to check contamination of Dicofol.

3. Use of Dicofol is recommended to be continued, and to be reviewed in 2018.

(Reference: ECR, Volume-III, pages:147-162)

January, 2018 if studies as recommended by the Expert Committee is not submitted by December, 2017.

(ii) Contamination of technical Dicofol with DDT should be less than 0.1%, and total contaminants by DDT and its metabolites should be less than 0.5% and overall purity should be 95% as per the Stockholm Convention. A mechanism should be formulated for surveillance in consultation with PPA and put up to the RC.

(iii) The pesticides needs to be re-evaluated for their bio-efficacy and residue data against major target pests as per approved label claims and baseline toxicity data may be generated by the Industry Associations by December, 2017 otherwise
### Diflubenzuron (Insecticide-IGR)

1. Diflubenzuron is an insecticide (insect growth regulator) registered during 1987 and approved for the control of insect pests in cotton crop under the Insecticides Act, 1968.

2. It is **restricted in Belize and Oman and currently in use in 39 countries** including Australia, Japan, France and

1. **Use of Diflubenzuron is recommended to be accepted by the Committee**

   - Certificate of Registration of the product deemed cancelled w.e.f. 1st Jan 2018.
   - The residue/persistence data require to be generated by industry association for fixation of waiting period for cherry, tomato, cabbage, cauliflower, brinjal, beans, citrus, rose, paddy and tobacco crop.
   - It is highly toxic to aquatic organisms hence, a cautionary statement should be incorporated on label leaflet that this product is toxic to aquatic organism hence should not be used near water bodies or pisciculture area.
USA.
3. It is a molecule having different kind of mode of action i.e., preventing chitin formation in insects. The literature showed its effectiveness against *H. armigera* alone as well as in combination with other insecticides (Srinivasan and Uthamasamy, 2001). The product is also reported to be effective against *Culex quinquefasciatus* the vector of Bancroftian filariasis in India (Sadanandane *et al.*, 2012). For details see Annexure –II.
4. It is classified as ‘slightly hazardous’ under class III (WHO classification, 2009).

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| 25. | **Dimethoate**  
(Insecticide) | USA.  
1. Dimethoate is an insecticide registered before 1972 (DRP) and approved for the control of insect pests in bajra, maize, sorghum, castor, mustard, safflower, bhindi, brinjal, cabbage, cauliflower, chillies, onion, potato, tomato, apple, apricot, banana, citrus, fig, mango and rose under the Insecticides Act, 1968.  
2. It is **banned in Korea, restricted in Belize, Cyprus and USA** and currently in use in 92 countries.  
3. Waiting period is not defined for the approved crops.  
4. It is highly toxic to honey bees.  
5. In plants and in the environment, omethoate occurs as a break down product of dimethoate within few days after application. Similar to dimethoate, omethoate breaks down within two weeks. Omethoate appears to be responsible for Dimethoate toxicity in insects and mammals. None of these compounds bioaccumulate, but highly toxic to honey bees, birds and freshwater invertebrates.  
continued.  
1. Residue data need to be generated by the Industry/Pesticide Associations where waiting period is not defined and reports should be submitted by December 2017.  
2. Since it is toxic to honey bees, spray applications should be avoided during the foraging period of bees.  
3. **Its use on vegetables which are eaten raw and apple should not be allowed.**  
4. **Use of Dimethoate is**  
5. The Committee accepted the recommendations and decided as under:  
   (i) The Certificate of Registration of technical and its formulation deemed to be invalid w.e.f. from 1st January, 2018 if studies as recommended by the Expert Committee is not submitted by December, 2017.  
   (ii) A warning may be incorporated in the label leaflet stating that this product is toxic to honey bees so do not spray during... |
(http://www.cdc.gov/biomonitoring/DimethoateOmethoate_BiomonitoringSummary.html). For details see Annexure – II.

6. It is classified as ‘moderately hazardous’ under class II (WHO classification, 2009).

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<td>recommended to be continued, and to be reviewed in 2018. (Reference: ECR, Volume-III, pages:163-176)</td>
<td>active honeybees foraging period of the day. (iii) A cautionary statement has to be incorporated on the label and leaflet that Dimethoate is toxic to aquatic organisms, hence should not be used near Water bodies, aquaculture or pisciculture area. (iv) A cautionary statement has to be incorporated on the label and leaflet that Dimethoate is toxic to Birds. (v) Label claims for the vegetables and fruits which are eaten raw should be deleted. (vi) The pesticides needs to be re-evaluated for their bio-efficacy and residue data against major target pests as per approved label claims and baseline toxicity</td>
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| **26. Dinocap**  
(Fungicide) | **1.** Dinocap is a fungicide registered before 1972 (DRP) and approved for the control of diseases in mango and rose under the Insecticides Act, 1968.  
**2.** It is **banned in Argentina and Sweden.**  
**3.** Risk of teratogenicity in mice and rabbits is reported.  
**4.** Waiting period is not defined for approved crops.  
**5.** Dinocap is a mixture of 6 isomers of which only one meptyl dinocap is biologically active. It is stated to be a refined product with better toxicological and environmental profile. | **1.** Residue data need to be generated by the Industry/ Pesticide Associations, where waiting period is not defined for approved crops and report should be submitted by December 2017.  
**2.** Pregnant women should   |

The Committee accepted the recommendations and decided as under:  
(i) The Certificate of Registration of technical and its formulation deemed to be invalid w.e.f. from 1st January, 2018 if studies as recommended by the Expert
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<td>6.</td>
<td>In India, application for registration of meptyl dinocap is under consideration of CIB &amp; RC since 2009.</td>
<td>not be allowed to participate in the spray operation to avoid exposure.</td>
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</table>
| 7. | Dinocap has been found to be effective against powdery mildew in rose as reported from Rajasthan Agricultural University, Jaipur (Sobti et al., 2000). For details see Annexure –II. | 3. **Use of Dinocap is recommended to be continued, and to be reviewed in 2018.**  
(Reference: ECR, Volume-III, pages:177-186) |
| 8. | It is classified as ‘moderately hazardous’ under class II (WHO classification, 2009). | Committee is not submitted by December, 2017.  
(ii) Label leaflet should give cautionary statement that the exposure to the pregnant women should be avoided.  
(iii) The pesticides needs to be re-evaluated for their bio-efficacy and residue data against major target pests as per approved label claims and baseline toxicity data may be generated by the Industry Associations by December, 2017 otherwise the Certificate of Registration of the product deem cancelled w.e.f. 1st Jan 2018.  
(iv) A cautionary statement has to be incorporated on the label and leaflet that it is highly toxic to aquatic organisms, hence should not be used. |
| 27. | **Diuron** (Herbicide) | 1. Diuron is a herbicide registered before 1972 (DRP) and approved for the control of weeds in cotton, banana, rubber, maize, citrus, sugarcane and grapes under the Insecticides Act, 1968.  
2. It is **banned in Angola and Russian Federation, withdrawn in Sweden** and **currently in use in USA, Brazil, Australia and EU.**  
3. It is classified as probable/likely carcinogen by the EPA, USA.  
4. Waiting period is not defined in approved crops.  
5. It is reported as a water contaminant.  
6. An extremely low concentration (0.1 ppb), it reduces photosynthesis by aquatic plants (Cox, 2003). For details see Annexure – II.  
7. It is classified as ‘slightly hazardous’ under class III (WHO classification, 2009). | 1. Its use should be avoided in areas adjoining to water bodies to prevent water contamination.  
2. Residue data need to be generated by the Industry/ Pesticide Associations, where waiting period is not defined and reports should be submitted by December 2017.  
3. **Use of Diuron is recommended to be continued, and to be reviewed in 2018.** (Reference: ECR, Volume-III, pages:187-202) | The Committee accepted the recommendations and decided as under:  
(i) The Certificate of Registration of technical and its formulation deemed to be invalid w.e.f. from 1st January, 2018 if studies as recommended by the Expert Committee is not submitted by December, 2017.  
(ii) A cautionary statement has to be incorporated in the label and leaflet that Diuron is toxic to aquatic organism, hence should not be used near Water bodies.  
(iii) The pesticides needs to be re-evaluated for their bio-efficacy and residue data against major target pests as per approved |
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<th>label claims and baseline toxicity data may be generated by the Industry Associations by December, 2017 otherwise the Certificate of Registration of the product deemed cancelled w.e.f. 1st Jan 2018. (iv) The residue/persistence data require to be generated by industry association for fixation of waiting period for Rubber, Grapes, Sugarcane, Citrus(sweet orange), Maize, Banana &amp; cotton crops.</th>
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<tr>
<td>28. Endosulfan (Insecticide)</td>
<td>1. Supreme Court of India has banned Endosulfan for production, use and sale all over India w.e.f. 13.05.2011 till further orders vide ad-interim order in the Writ Petition (Civil) No. 213 of 2011. 2. Since under consideration of court, it is not reviewed.</td>
<td>1. Use of Endosulfan in India is being examined by the Supreme Court. (Reference: ECR, Volume-II, pages:219-238)</td>
</tr>
<tr>
<td>29. Ethofenprox</td>
<td>1. Ethofenprox is an insecticide registered during 1992</td>
<td>1. The labels and leaflets</td>
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| 30. | **Fenarimol** (Fungicide) | **Use of Fenarimol is recommended to be banned.**  
(Reference: ECR, Volume-IV, pages:89-94) | The Committee accepted the recommendations and decided as under:  
(i) The registration, import and manufacture is prohibited henceforth and its use is completely banned |
|      | **Fenarimol** is a fungicide registered during 1991 and approved for the control of disease in *apple crop* under the Insecticides Act, 1968. | (i) The registration, import and manufacture is prohibited henceforth and its use is completely banned |
| 1.   | It is **banned in Denmark and Russia.** |  |
| 2.   | It is **banned in Denmark and Russia.** |  |
| 3.   | It is not in current use as per the available information. |  |
| 4.   | It is reported harmful to the unborn child and male fertility, and unacceptable persistence in soil. |  |
| 5.   | It is reported that Fenarimol resulted in |  |
| (Insecticide) | and approved for the control of insect pests in rice crop under the Insecticides Act, 1968. | should bear the safety precautions that it should not be used in the areas where pisciculture / aquaculture is practiced and spray should be avoided during foraging period of bees.  
2. **Use of Ethofenprox is recommended to be continued.**  
(Reference: ECR, Volume-II, pages:91-100) |  |
| 1.   | Ethofenprox, a pyrethroid like insecticide having very low mammalian toxicity has been reported to have a safety margin of 200-800 times the operational dose for fish species (Yameogo et al., 2001). Regarding effect on honey bees, it has been reported that etofenprox is less toxic to honey bees (*Apis mellifera*) than neonicotinoids (Matsumoto, 2013). For details see **Annexure –II.** |  |
| 2.   | It is toxic to aquatic organism, hence a cautionary statement has to be incorporated in label and leaflet that avoid spray near Water bodies, aquaculture/pisciculture area.  
(ii) A warning may be incorporated in the label leaflet stating that this product is toxic to honey bees so do not spray during active honeybees foraging period of the day. |  |
| 3.   | Fenarimol is a fungicide registered during 1991 and approved for the control of disease in *apple crop* under the Insecticides Act, 1968. |  |
| 4.   | It is **banned in Denmark and Russia.** |  |
| 5.   | It is reported harmful to the unborn child and male fertility, and unacceptable persistence in soil. |  |
| 6.   | It is classified as ‘**unlikely to present acute hazard in normal use**’ under class U (WHO classification, 2009). |  |
demasculinization of males, as indicated by impairment of mounting behavior together with signs of decreased numbers of E2 receptors in the brain (http://www.who.int/ipcs/publications/en/ch5.pdf). For details see Annexure – II.

6. It is classified as ‘slightly hazardous’ under class III (WHO classification, 2009).

### 31. Fenitrothion (Insecticide)

1. Fenitrothion is an insecticide registered before 1972 (DRP) and approved for the control of household insect pests in houses under the Insecticides Act, 1968. It is banned for use in agriculture, except for locust control in scheduled desert area, and public health.

2. It is **restricted in Canada** and **India**.

3. Plant Protection Advisor has informed that *Fenitrothion has been used earlier in Desert Locust Control and it may be used in emergency situation of locust outbreak.*

4. Human epidemiological evidence indicates that fenitrothion effects eyes and may cause retinal degeneration and myopia (http://punenvis.nic.in/index3.aspx?sslid=2175&subsublinkid=1428&langid=1&mid=1). For details see Annexure – II.

5. It is classified as ‘moderately hazardous’ under class II (WHO classification, 2009).

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1. Fenitrothion is banned for use in agriculture.

2. **Use of fenitrothion is recommended to be continued.**


(i) The Committee accepted the recommendations to permit its use in desert locust control and public health only.

(ii) It is toxic to aquatic organism, hence a cautionary statement has to be incorporated in label and leaflet that avoid use near Water bodies, aquaculture/pisciculture area.

(iii) The product is highly toxic to birds hence label leaflet should incorporate a
| 32. | Fenpropathrin  
(Insecticide) | 1. Fenpropathrin is an insecticide registered during 2005 and approved for the control of insect pests in cotton, chilli, brinjal, okra, tea and paddy crops under the Insecticides Act, 1968.  
2. It is effective against borer, mite and other sucking pests.  
3. It is banned in Malaysia, restricted in Korea, withdrawn in EU and currently in use in 23 countries.  
4. Following the recommendations of Dr. C.D. Mayee Committee, the safety precautions that it should not be used in the areas where Pisciculture / Aquaculture is practiced along with rice cultivation has been incorporated on label and leaflets.  
5. It is highly toxic to bee.  
6. Regarding toxicity to fish, it has been reported that bioavailability and acute toxicity of Fenpropathrin decreased in the presence of aquatic humic acid in fresh water systems (Wu et al., 1999). For details see Annexure –II.  
7. It is classified as ‘moderately hazardous’ under class II (WHO classification, 2009). | 1. Its spraying should be avoided during foraging period of bees.  
2. Use of Fenpropathrin is recommended to be continued.  
(Reference: ECR, Volume-II, pages:101-113) | The Committee accepted the recommendations and decided as under:  
(i) A warning may be incorporated in the label leaflet stating that this product is toxic to honey bees so do not spray during active honeybees foraging period of the day.  
(ii) A cautionary statement has to be incorporated in the label and leaflet that Fenpropathrin is toxic to aquatic organism, hence should not be used near Water bodies, aquaculture or pisciculture area. |
| 33. | Fenthion  
(Insecticide) | 1. Fenthion is an insecticide registered before 1972 (DRP) and approved for the control of household insect pests in houses and under Public Health Programme under the Insecticides Act, 1968. The use of it is banned in agriculture | 1. Considering the environmental risk and availability of safer molecules, the use of Fenthion is recommended to be discontinued.  
The registration, |
except for locust control, household and public health.

2. It is banned in Angola, restricted in EU, Sri Lanka and Australia, withdrawn in India and USA and currently in use in 14 countries.

3. Following the recommendation of Dr. C.D. Mayee Committee (2006) the industry submitted the protocol for multilocational (3 locations) study in the workers of the manufacturing unit under the supervision of NIOH. The protocol was examined by the CIB & RC expert and put up to 348th RC meeting for approval. The protocol was approved with instructions to the applicant for incorporation of suggested amendments. However, industry has informed vide letter No. Nil dated 20.08.2014 that M/s Bayer Crop Science India is voluntarily withdrawing Fenthion 82.5% w/w EC, 80% EC and 2% GR from the market in January 2016 and will surrender all registration certificates.

4. Plant Protection Advisor has informed that Fenthion has not been used earlier in Desert Locust Control.

5. It is reported highly toxic to fish, freshwater invertebrates, birds and honeybees.

6. It is reported that Fenthion may be mutagenic, cause genetic aberrations and may be carcinogenic (http://punenvis.nic.in/index3.aspx?sslid=2175&subsublinkid=1428&langid=1&mid=1). For details see Annexure – II.

7. It is classified as ’moderately hazardous’ under class II (WHO classification, 2009).

Fenthion in India is recommended to be banned.

(Reference: ECR, Volume-IV, pages:95-114)

import and manufacture is prohibited henceforth and its use is completely banned w.e.f. 1st Jan 2018.

(iii) A cautionary statement has to be incorporated in the label and leaflet that it is toxic to aquatic organism, hence should not be used near water bodies, aquaculture or pisciculture area.

(ii) The product is highly toxic to birds hence label leaflet should incorporate a cautionary statement regarding this.

34. Iprodione (Fungicide)

1. Iprodione is a fungicide registered during 1995 and approved for the control of diseases in rapeseed, mustard, rice, tomato and grapes under the Insecticides Act, 1968.

1. Use of Iprodione is recommended to be continued.

The Committee accepted the recommendations.
2. Fungal diseases are a serious constraint in approved crops.  
3. It is **banned in Denmark** and currently in use in 61 countries including major agricultural countries like China, Brazil, Australia, Japan, Canada etc.  
4. According to Environmental Protection Agency, US (EPA), it is categorized as probably/likely carcinogen.  
5. It is classified as ‘slightly hazardous’ under class III (WHO classification, 2009).  

(i) A cautionary statement has to be incorporated in the label and leaflet that it is toxic to aquatic organism, hence should not be used near Water bodies, aquaculture or pisciculture area.

| 35. Kasugamycin (Fungicide-bactericide) | 1. Kasugamycin is a systemic antibiotic fungicide registered during 1999 and approved for the control of disease in rice crop under the Insecticides Act, 1968.  
2. It is **restricted in Belize** allowed for control of rice blast of rice, **withdrawn in EU and Japan** and currently in use in 34 countries including Argentina, New Zealand and USA.  
3. It is an effective pesticide to control blast disease in paddy.  
4. It has been reported to be effective for the control of rice blast (Pooja and Katoch, 2014) bacterial spot of tomato caused by *Xanthomonas perforans* (Vallad et al., 2010). For details see Annexure –II.  
5. It is classified as ‘unlikely to present acute hazard in normal use’ under class U (WHO classification, 2009). |

| 36. Linuron (Herbicide) | 1. Linuron is a herbicide registered during 1998 and approved for the control of weeds in pea crop under the Insecticides Act, 1968.  
2. It is **banned in Norway and Russia** considering |

(i) Use of Kasugamycin is recommended to be continued.  

(Reference: ECR, Volume-II, pages:114-120)  

1. **Use of Linuron is recommended to be continued.**  

(Reference: ECR, Volume-II, pages:121-126)  

The Committee accepted the recommendations.

The Committee accepted the recommendations and decided as under:
human carcinogen nature, restricted in Sweden and currently in use in Brazil, USA, Israel, Europe and Africa.

3. Draft order was issued for banning of Linuron in agriculture during 2008, (S.O. 3009(E) dated 31 December, 2008, which was not finalized. For details see Annexure – II.

4. It is classified as ‘slightly hazardous’ under class III (WHO classification, 2009).

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<tr>
<th>Malathion (Insecticide)</th>
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<tr>
<td>1. Malathion is an insecticide registered before 1972 (DRP) and approved for the control of insect pests in paddy, sorghum, pea, soybean, castor, sunflower, bhindi, brinjal, cabbage, cauliflower, radish, turnip, tomato, apple, mango, grape crops and to control household insect pests under the Insecticides Act, 1968.</td>
</tr>
<tr>
<td>2. It is banned in EU, restricted in Sri Lanka, Canada and Korea. It is currently in use in 38 countries.</td>
</tr>
<tr>
<td>3. It is highly toxic to honey bee.</td>
</tr>
<tr>
<td>4. Waiting period is not defined in approved crops.</td>
</tr>
<tr>
<td>5. The Quality Branch of Department of Food, Civil Supplies and Consumer Affairs (Govt. of Punjab) is imparting training to the field staff once a year for the treatment of wheat stocks by malathion @ one lit per 2375 MT fortnightly (<a href="http://foodsuppb.nic.in/Branches/Quality.htm">http://foodsuppb.nic.in/Branches/Quality.htm</a>). However, its use on wheat stock is not approved under the Insecticides Act, 1968. For details see Annexure – II.</td>
</tr>
<tr>
<td>6. It is classified as ‘slightly hazardous’ under class III (WHO classification, 2009).</td>
</tr>
<tr>
<td>7. It is probably carcinogenic to humans as per IARC.</td>
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recommended to be banned considering a human carcinogen nature.

(Reference: ECR, Volume-IV, pages:115-128)

The Committee accepted the recommendations and decided as under:

(i) The Certificate of Registration of technical and its formulation deemed to be invalid w.e.f. 1st January, 2018 if studies as recommended by the Expert Committee is not submitted by December, 2017.

(ii) A warning may be incorporated in the label leaflet stating that this product is toxic to honey bees so do not spray during active honeybees foraging period of the day.

(iii) The pesticides
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<th>recommended to be continued and to be reviewed in 2018.</th>
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<td></td>
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<td>(Reference: ECR, Volume-III, pages:221-234)</td>
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needs to be re-evaluated for their bio-efficacy and residue data against major target pests as per approved label claims and baseline toxicity data may be generated by the Industry Associations by December, 2017 otherwise the Certificate of Registration of the product deem cancelled w.e.f. 1st Jan 2018.

(iv) The residue/persistence data require to be generated by industry association for fixation of waiting period for Paddy, Sorghum, Pea, Soybean, Castor, Sunflower, Bhindi, Brinjal, Cabbage, Cauliflower, Radish, Turnip, Tomato, Apple, Mango & Grape crops.

(iv) A cautionary statement
### Minutes of 361st Special Meeting of RC held on 22nd December, 2015.

#### 38. Mancozeb (Fungicide)

1. Mancozeb is a dithiocarbamate fungicide registered before 1972 (DRP) and approved for the control of diseases in potato, tomato, wheat, maize, paddy, jowar, chillies, onion, tapioca, sugar beet, cauliflower, groundnut, grapes, guava, banana, apple, cumin crops under the Insecticides Act, 1968.

2. It is **banned in Libya Arab Jamahiriya, restricted in Korea and Sweden** and currently in use in **44 countries**.

3. To investigate the effect of Mancozeb on iodine metabolism and thyroid profile of workers, Dr. C.D. Mayee Committee (2006) recommended to carry out a multilocalional study (minimum 3 locations) as per protocol approved by the RC in the workers of the manufacturing unit of the basic manufactures of Mancozeb under the supervision of NIOH, ICMR, Ahmadabad.

   Protocols have been finalized by Dr. D. Kanungo Committee. The meeting of Sub-committee with Director, 1. Each batch of Mancozeb Technical should be monitored for Ethylene Thio Urea (ETU) content by the manufacturer and record to be maintained.

2. The labels and leaflets should bear the safety precautions that it should not be used near pisciculture/aquaculture water bodies.

3. Report of the studies on iodine metabolism affect the thyroid profile should be the Committee accepted the recommendations and decided as under:

   (i) The Certificate of Registration of technical and its formulation deemed to be invalid w.e.f. from 1st January, 2018 if studies as recommended by the Expert Committee is not submitted by December, 2017.

   (ii) A cautionary statement has to be incorporated in the label and leaflet that it is highly toxic to aquatic organism, hence should not be used near Water bodies, aquaculture or pisciculture area.

   (v) The product is toxic to birds hence label leaflet should incorporate a cautionary statement regarding this.
NIOH was held on 17.12.2014 at ICMR, Headquarters. Medical colleges were identified near the respective manufacturing sites. Accordingly, the concerned industry has been communicated to contact the Principal/ dean/ Head of medical colleges.

4. Ethylene Thio Urea (ETU) content of the technical should not be more than 0.5%.

5. Waiting period is not defined for many approved crops.

6. It is reported that on application of mancozeb on tomato crop the residue level of ETU increased up to 3 days, which rapidly dissipated to safer metabolite ethyleneurea (EU) and reached the below detectable limit within 25 days (Biswa et al., 2003). Mancozeb is also reported sensitive to fingerlings than adult fishes and it has potential to damage biochemicals and enzymatic pathways (Srivastava & Singh, 2014). For details see Annexure – II.

7. According to EPA, US it is probably/ likely carcinogen.

8. It is classified as ‘**unlikely to present acute hazard in normal use**’ under class U (WHO classification, 2009).

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<tr>
<th>Minutes of 361st Special Meeting of RC held on 22nd December, 2015.</th>
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<tr>
<td>NIOH was held on 17.12.2014 at ICMR, Headquarters. Medical colleges were identified near the respective manufacturing sites. Accordingly, the concerned industry has been communicated to contact the Principal/ dean/ Head of medical colleges.</td>
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<tr>
<td>4. Ethylene Thio Urea (ETU) content of the technical should not be more than 0.5%.</td>
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<tr>
<td>5. Waiting period is not defined for many approved crops.</td>
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<tr>
<td>6. It is reported that on application of mancozeb on tomato crop the residue level of ETU increased up to 3 days, which rapidly dissipated to safer metabolite ethyleneurea (EU) and reached the below detectable limit within 25 days (Biswa et al., 2003). Mancozeb is also reported sensitive to fingerlings than adult fishes and it has potential to damage biochemicals and enzymatic pathways (Srivastava &amp; Singh, 2014). For details see Annexure – II.</td>
</tr>
<tr>
<td>7. According to EPA, US it is probably/ likely carcinogen.</td>
</tr>
<tr>
<td>8. It is classified as ‘<strong>unlikely to present acute hazard in normal use</strong>’ under class U (WHO classification, 2009).</td>
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submitted by Industry/ Pesticide Associations before December, 2017.

4. Residue data need to be generated by the Industry/ Pesticide Associations, where waiting period is not defined and reports should be submitted by December 2017.

5. **Use of Mancozeb is recommended to be continued and to be reviewed in 2018.**


Mancozeb is toxic to aquatic organism hence should not be used near Water bodies, aquaculture or pisciculture area.

(iii) Conditions with reference to recommendation No. 1 (ETU Content should not be more than 0.5%) be incorporated on the certificate of registration.

(iv) The warning on label leaflet regarding wearing PPE as approved by the registration committee be continued to be incorporated.

(v) The pesticides needs to be re-evaluated for their bio-efficacy and residue data against major target pests as per approved label claims and baseline toxicity data may be generated by the Industry Associations by December, 2017 otherwise
| 39. | **Mepiquat Chloride**  
(Plant Growth Regulator) | **1.** Mepiquat chloride is a plant growth regulator registered during 2003 and approved to restrict excessive vegetative growth of potato and cotton crops under the Insecticides Act, 1968.  
**2.** It is banned in Norway due to high mobility in soil and low degradation in water, restricted in Belize for use as a defoliator only in cotton and currently in use in 34 countries, which includes Australia, Japan, USA and UK.  
**3.** Tamil Nadu Agricultural University reported that the adverse effects of water stress on crop growth can be mitigated by the use of Mepiquat chloride through promoting root growth (for more water absorption) and suppressing leaf | **1. Use of Mepiquat Chloride is recommended to be continued.**  
(vi) The residue/persistence data require to be generated by industry association for fixation of waiting period for Wheat, Maize, Paddy, Jowar, Potato, chilies, Onion, Tapioca, Ground nut, Cauliflower, Grapes, Guava, Banana, Apple & Cumin crops.  
The Committee accepted the recommendations. |
area development (for reducing transpiration loss of water) and delaying onset of leaf senescence (http://agritech.tnau.ac.in/agriculture/agri_drought_management.html). EPA in RED document summarizes that under aerobic conditions in soil, it appears to degrade rapidly to CO\textsubscript{2}. It is considered to be relatively non-mobile and limited potential for groundwater contamination. It is not expected to accumulate in fish (http://www.epa.gov/oppsrrd1/reregistration/REDs/factsheets/2375fact.pdf). For details see Annexure –II.

4. It is classified as ‘moderately hazardous’ under class II (WHO classification, 2009).

1. Safety measures need to be stated on labels/leaflets to avoid exposure to skin.
2. Use of Metaldehyde is recommended to be continued.

(Reference: ECR, Volume-II, pages:143-150)

### Metaldehyde

<table>
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<tr>
<th>40. Metaldehyde (Insecticide)</th>
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<tbody>
<tr>
<td>1. Metaldehyde is an insecticide (molluscicide) registered before 1972 (DRP) and approved for the control of mollusks in citrus, rubber, paddy, tea and vegetables under the Insecticides Act, 1968.</td>
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<tr>
<td>2. It is restricted in Kuwait and allowed to be used under strict supervision of trained personnel for health and environmental reasons. It is currently in use in three countries (Australia, India and Kuwait).</td>
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<td>3. Long term repeated skin exposure to metaldehyde can result in dermatitis (inflammation of the skin) in humans (<a href="http://www.pan-uk.org/pestnews/Actives/Metaldeh.htm">http://www.pan-uk.org/pestnews/Actives/Metaldeh.htm</a>). No negative effects recorded on the predators (carabid beetles, staphylinid beetles) beneficial organisms (honey bees, earthworms) and aquatic organisms (fish, Crustacea). Also does not show tendency to accumulate in soil, water bodies, plants and mammals (<a href="http://cesandiego.ucdavis.edu/files/54211.pdf">http://cesandiego.ucdavis.edu/files/54211.pdf</a>). For details see Annexure –II.</td>
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</tbody>
</table>

The Committee accepted the recommendations and decided as under:

(i) A warning on label leaflet regarding wearing PPE to prevent skin irritation and dermatitis.

(ii) The pesticides needs to be re-evaluated for their bio-efficacy and residue data against major target pests as per approved label claims and baseline toxicity data may be generated by the Industry Associations by December, 2017 otherwise
41. **Methomyl (Insecticide)**  

1. Methomyl is an insecticide registered during 1996 and approved for the control of insect pests of cotton, pigeon pea, tomato, chilli, groundnut and grapes under the Insecticides Act, 1968. Only 40% SP formulation of Methomyl is approved for use in India. 
2. It is **banned in six countries, restricted in six countries** and **currently in use in 62 countries**. 
3. Methomyl is reported to be toxic to honey bees, silkworm and fish but sufficient field data are not available. 
4. It is classified as **highly hazardous** under class Ib (WHO classification, 2009). 

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| 4. | It is the only registered molluscicide in Indian market. | 1. Toxidity data on honey bees, silkworm and fish under Indian field conditions need to be generated by the Industry/Pesticide Associations and reports to be made available latest by December 2017. | The Committee accepted the recommendations and decided as under:  
  (i) The Certificate of Registration of technical and its formulation deemed to be invalid w.e.f. from 1st January, 2018 if studies as recommended by the Expert Committee is not submitted by December, 2017.  
  (ii) A warning may be incorporated in the label leaflet stating that this product is toxic to honey bees and silk worm so do not spray during active honeybees foraging period of the day or near sericulture area.  
  (iii) A cautionary statement |
| 5. | It is classified as ‘**moderately hazardous**’ under class II (WHO classification, 2009). | 2. **Use of Methomyl is recommended to be continued, and to be reviewed in 2018.**  

The Certificate of Registration of the product deem cancelled w.e.f. 1st Jan 2018.
42. **Methoxy Ethyl Mercury Chloride** (Fungicide)

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<tr>
<td>1. MEMC is a fungicide registered before 1972 (DRP) and approved for the control of diseases in sugarcane and potato crops under the Insecticides Act, 1968. <strong>The use of MEMC is banned completely except for seed treatment of potato and sugarcane.</strong></td>
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<td>2. <strong>It is banned in 29 countries (including EU), withdrawn in New Zealand and currently in use in Latvia and Australia.</strong></td>
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<td>3. <strong>Sugarcane Breeding Institute, Coimbatore has</strong></td>
<td>1. India has signed the Minamata Convention on Mercury (2013) on 30th September 2014 which requires phasing out use of mercury in five years.</td>
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<td>2. <strong>Use of methoxy ethyl mercury chloride (MEMC)</strong> has to be incorporated in the label and leaflet that Methomyl is toxic to aquatic organism hence should not be used near Water bodies, aquaculture, pisciculture area and Silk worm.</td>
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<td>(iv) The product is highly toxic to birds hence label leaflet should incorporate a statement that avoid use near bird habitat.</td>
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<td>(v) The use of present formulations should be kept under strict surveillance by the State Government and status report be obtained from time to time.</td>
<td>The Committee accepted the recommendations and decided as under: The registration, import and manufacture is prohibited henceforth and its use is completely banned w.e.f. 1st Jan 2018</td>
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informed that MEMC is not currently recommended, the chemical may be deregistered for use in sugarcane.

4. Dr. R.B. Singh Committee (1999) recommended that industry will study the impact of MEMC on environment i.e., persistence in soil and water and submit to the RC within a period of one year. But industry has not submitted the study report.

5. India has signed the Minamata Convention on Mercury (International Convention on phasing out Mercury) on 30.09.2014 (http://www.mercuryconvention.org/Countries). It is reported that in 2001 M/s Hindustan Lever Limited (now Hindustan Unilever Limited dumped several tons of toxic mercury-bearing waste behind the factory in the Kodaikanal (Tamil Nadu) resulting in the mercury leaching into the soil. Following the incident, Kodaikanal was branded as India’s Minamata (Sharma, 2014). For details see Annexure – II.

6. It is classified as ‘extremely hazardous’ under class Ia (WHO classification, 2009).

### 43. Methyl Parathion (Insecticide)

1. Methyl parathion is an insecticide registered before 1972 (DRP) and approved for the control of insect pests in paddy, cotton, black gram, green gram, mustard and wheat crops under the Insecticides Act, 1968. Methyl parathion 50% EC and 2% DP formulations are banned for use in fruits and vegetables and use is permitted only on those crops where honey bees are not acting as pollinator.

2. It is **banned in 19 countries (including EU)** and **restricted in eight countries**.

3. The study on risk assessment through adoption of Predictive Operator Exposure Model (POEM) in collaboration was earlier recommended to be restricted for use for the control of potato and sugarcane diseases as seed treatment.

3. **Considering that MEMC is a mercurial compound, it is recommended to be banned.**

(Reference: ECR, Volume-IV, pages:129-142)

The Committee accepted the recommendations and decided as under:

(i) The registration, import and manufacture is prohibited henceforth and its use is completely banned w.e.f. 1st Jan 2018

(ii) A cautionary statement
with Central Insecticides Laboratory through harmonization of proper guidelines recommended by Dr. R.B. Singh Committee (1999) was to be undertaken within 6 months, but this study has not been taken up.

4. It has been considered to pose environmental risks to aquatic invertebrates, birds and bees (http://www.pan-uk.org/pestnews/Issue/pn51/pn51p7b.htm) and also reported that repeated exposure may cause personality changes like depression, anxiety or irritability (http://nj.gov/health/eoh/rtkweb/documents/fs/1283.pdf).

5. It is classified as ‘extremely hazardous’ under class Ia (WHO classification, 2009).

### 44. Monocrotophos (Insecticide)

1. It is an insecticide registered before 1972 (DRP) and approved for the control of insect pests in cotton, paddy, maize, Bengal gram, green gram, pea, red gram, sugarcane, citrus, mango, coconut, coffee and cardamom crops under the Insecticides Act, 1968. It is banned for use on vegetables.

2. It is **banned in 12 countries** (including EU); **restricted in seven countries**, **withdrawn in USA** and **currently in use in 37 countries** including France, Spain, 1. Residue detected in 99 samples of vegetables above MRL, so monocrotophos is being misused. As it is banned for use on vegetables, steps need to be taken to restrict its use

The Committee accepted the recommendations and decided as under:

(i) The Certificate of Registration of technical and its formulation deemed to be invalid w.e.f. from 1st
3. Residue detected in 99 samples of vegetables above MRL by AINPPR, IARI, New Delhi, so Monocrotophos is being misused.
4. Study on endocrine disruption was recommended by Dr. C.D. Mayee Committee (2006) to be undertaken within a period of 5 years. The CIB & RC informed that the issue was discussed with the permission of chair in the meeting held on 17.12.2014 for Mancozeb because the sub-committee constituted by RC was same for Monocrotophos as well. The concerned industry has been asked again to comply with decision of RC and initiate the study in the Govt. Labs identified by them.
5. It is highly toxic to honey bees.
6. Waiting period is not defined for the approved crops.
7. WHO has reviewed the current practices and health consequences of Monocrotophos, which is one of the main agents used for suicide attempts in India under the title ‘Health implications from monocrotophos use: a review of the evidence in India’ (http://www.searo.who.int/entity/occupational_health/health_implications_from_monocrotophos.pdf). For details see Annexure- II.
8. It is listed in PIC and classified as ‘highly hazardous’ under class Ib (WHO classification, 2009).

2. The study on endocrine disruption should be completed by December 2017. If not completed as per the finalized protocol by December 2017, the use of Monocrotophos may be discontinued.
3. Field studies on toxicity to bees also need to be undertaken by Industry/ Pesticide Associations and report to be submitted latest by December 2017.
4. Residue data need to be generated by the Industry/ Pesticide Associations, where waiting period is not defined and reports should be submitted by December 2017.
5. Use of Monocrotophos is allowed to be continued, and to be reviewed in January, 2018 if studies as recommended by the Expert Committee is not submitted by December, 2017.
(ii) A warning may be incorporated in the label leaflet stating that this product is toxic to honey bees so do not spray during active honeybees foraging period of the day.
(iii) The use of present formulations should be kept under strict surveillance by the State Government and status report be obtained from time to time.”
(iv) A cautionary statement has to be incorporated in the label and leaflet that it is toxic to aquatic organism, hence should not be used near Water bodies, aquaculture or pisciculture area.
(v) The product is highly
| 45. | **Oxyfluorfen**  
(Herbicide) | **1.** Oxyfluorfen is a herbicide registered during 1989 and approved for the control of weeds in rice, tea, onion, potato  
1. **Residue data need to be generated by the Industry** | **2018.**  
(Reference: ECR, Volume-III, pages:283-308)  
toxic to birds hence label leaflet should incorporate a statement that avoid use near bird habitat.  
(vi) The pesticides needs to be re-evaluated for their bio-efficacy and residue data against major target pests as per approved label claims and baseline toxicity data may be generated by the Industry Associations by December, 2017 otherwise the Certificate of Registration of the product deem cancelled w.e.f. 1st Jan 2018.  
(vii) The residue/persistence data require to be generated by the Industry association for fixation of waiting period for Paddy, Maize, Black gram, Green gram, Pea, Red gram, Sugarcane, Cotton, Coconut, Coffee & Cardamom crops.  
The Committee accepted the recommendations and |
and groundnut crops under the Insecticides Act, 1968.

2. It is restricted in six countries, withdrawn in Norway and currently in use in 57 countries.

3. Perchloroethylene (PCE) content exceeding 200 ppm in the formulated product is reported to be a liver carcinogen in mice.

4. It is reported that PCE is a manufactured chemical that is primarily used for dry cleaning fabrics and degreasing metals; to make other chemicals, including chlorofluorocarbons; rubber coatings; as an insulating fluid and cooling gas in electrical transformers; as a scouring, sizing, and desizing agent in textiles; an ingredient in aerosol products, solvent soaps, printing inks, adhesives, sealants, paint removers, paper coatings, leather treatments, automotive cleaners, polishes, lubricants, and silicones; also an ingredient in some consumer products, including typewriter correction fluid, adhesives, spot removers, wood cleaners, and shoe polish (http://toxtown.nlm.nih.gov/text_version/chemicals.php?id=220). For details see Annexure – II.

5. Waiting period is not defined for labeled crops.

6. It is a probable carcinogen as per EPA, US and classified as ‘unlikely to present acute hazard in normal use’ under class U (WHO classification, 2009).

Pesticide Associations, where waiting period is not defined and reports should be submitted by December 2017.

2. Use of Oxyfluorfen is recommended to be continued, and to be reviewed in 2018.


decided as under:

(i) The Certificate of Registration of technical and its formulation deemed to be invalid w.e.f. from 1st January, 2018 if studies as recommended by the Expert Committee is not submitted by December, 2017.

(ii) A condition on CR be incorporated that “Perchloroethylene (PCE) content should not exceeding 200 ppm in the formulated product”.

(iii) A cautionary statement has to be incorporated in the label and leaflet that it is highly toxic to aquatic organism, hence should not be used near Water bodies, aquaculture or pisciculture area.

(iv) The residue/persistence data require to be generated by industry association for fixation of waiting period.
### 361st Special Meeting of RC held on 22nd December, 2015.

| 46. | Paraquat Dichloride (Herbicide) | 1. Paraquat dichloride is a herbicide registered before 1972 (DRP) and approved for the control of weeds in tea, potato, cotton, rubber, rice, wheat, maize, grapes and apple crops under the Insecticides Act, 1968.
   2. Weeds are a major problem in the labeled crops in India.
   3. It is **banned in five countries** (including EU); **restricted in nine countries**; **withdrawn in four countries** and **currently in use in 87 countries**, which includes Australia, China, Japan and USA.
   4. In case of soil microorganisms, it is reported that herbicide causes transient impact on soil microbial populations at field application rate (Baboo et al., 2013). See details in **Annexure-II**.
   5. Misuse of Paraquat dichloride can lead to acute toxicity.
   6. Misuse of the container is a major problem. Dr. R.B. Singh Committee recommended ‘the container of the product should be made less attractive’ but no action has been taken.
   7. It is classified as ‘**moderately hazardous**’ under class II (WHO classification, 2009). |

| 58. |  | 1. It should be used with caution.
   2. Shape of the container should be changed to make it difficult for reuse as water bottle or for storing food items etc. Also the toxicity (poison) logo should be printed on the bottle itself.
   3. **Use of Paraquat dichloride is recommended to be continued.**
   (Reference: ECR, Volume-II, pages:151-169) |

The Committee accepted the recommendations and decided as under:

(i) The Certificate of Registration of technical and its formulation deemed to be invalid w.e.f. from 1st January, 2018 if packaging as recommended by the Expert Committee is not amended by December, 2017.

(ii) Workshops should be organized to train medical personnel serving at grass root level to treat poisoning patients.

(iii) The pesticides needs to be re-evaluated for their bio-efficacy and residue data against major crops for Rice (Direct sown as pre-emergence), groundnut, Tea, Onion & Potato crops.
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| 47. | **Pendimethalin**  (Herbicide) | **1.** Pendimethalin is a selective pre-emergent herbicide registered during 1987 and approved for the control of weeds in wheat, rice, cotton and soybean crops under the Insecticides Act, 1968.  
**2.** It is **banned in Norway, restricted in Sweden** and **currently in use in 26 countries**.  
**3.** Multilocational field studies as recommendations by Dr. C.D. Mayee Committee (2006) to assess the impact of Pendimethalin spray on aquatic organisms were carried out by National Bureau of Fish Genetic Resources, (ICAR), Lucknow and reports submitted by the industry to CIB & RC.  
**4.** Waiting period is not defined for the approved crops.  
**5.** Its persistence studied in six types of tropical soils showed that its degradation was more rapid under flooded condition than non-flooded condition (Rai *et al*., 2000). It is reported effective against multiple herbicide resistant *Phalaris minor* populations (Chhokar *et al*., 2012). Pendimethalin is reported to target pests as per approved label claims and baseline toxicity data may be generated by the Industry Associations by December, 2017 otherwise the Certificate of Registration of the product deem cancelled w.e.f. 1st Jan 2018.|

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|   | **1.** Comments in the report on Pendimethalin on aquatic organisms should be expedited by the CIB & RC.  
**2.** Residue data need to be generated by the Industry/ Pesticide Associations, where waiting period is not defined and reports should be submitted by December 2017.  
**3.** Use of Pendimethalin is recommended to be continued, and to be reviewed in 2018. | The Committee accepted the recommendations and decided as under:  
**(i)** The Certificate of Registration of technical and its formulation deemed to be invalid w.e.f. from 1st January, 2018 if studies as recommended by the Expert Committee is not submitted by December, 2017.  
**(ii)** A cautionary statement has to be incorporated in the label and leaflet that it is highly toxic to aquatic organism hence should not be used near water bodies. |
| 48. | Phorate (Insecticide) | to persist up to 90 days in soil applied at 1 and 2 kg a.i./ha and in water applied at 0.5 and 1.0 mg/L. At harvest residue in wheat grains and straw was found below determination limit (0.001 mg/kg) when Pendimethalin was applied once @ 1 and 2 kg a.i./ha. Hence, it was considered safe from consumer and environmental point of view (Chopra et al., 2015). For details see Annexure – II. | (Reference: ECR, Volume-III, pages:321-332) | be used near Water bodies, aquaculture or pisciculture area. (iii) The residue/persistence data require to be generated by industry association for fixation of waiting period for wheat and rice crops. |

| | | (i) Use of Phorate is recommended to be phased out in five years (by 2020). | (Reference: ECR, Volume-IV, pages:241-254) | The Committee accepted the recommendations and decided as under: (i)No new certification of registration to manufacture shall be issued after December, 2017. (ii)No person shall import, manufacture or formulate Phorate w.e.f. 01/01/2019. (iii)The use of Phorate shall be completely banned w.e.f. 31/12/2020. (iv)All concerned including State Licensing Authorities should be communicated |
domain IIA of HSA and the significant ultrastructural changes, reactive oxygen species (ROS) generation, mitochondrial damage and cell death in phorate treated cultured human amnion epithelial (WISH) cells, elucidated phorate induced cellular toxicity (Saquib et al., 2011). For details see Annexure – II.
5. It is highly toxic to honey bees.
6. It is classified as ‘extremely hazardous’ under class Ia (WHO classification, 2009).

49. Phosphamidon

1. Phosphamidon is an insecticide registered before 1972 (DRP) and approved for the control of insect pests in

1. Use of Phosphamidon is recommended to be

with the above decision of the Registration Committee through public notice and other suitable means.
(vi) Product is highly toxic to aquatic organisms hence, a condition should be incorporated on label leaflet that this product is toxic to aquatic organism hence should not be used near water bodies or pisciculture area.
(vi) A warning may be incorporated in the label leaflet stating that this product is toxic to honey bees so do not spray during active honeybees foraging period of the day
(vii) The product is highly toxic to birds hence label leaflet should incorporate a cautionary statement.

The Committee accepted the
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<tr>
<th>(Insecticide)</th>
<th>paddy and brinjal crops under the Insecticides Act, 1968. Its 85% SL formulation is banned for import, manufacture and use.</th>
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<tr>
<td>2.</td>
<td>It is banned in <strong>13 countries</strong>, restricted in <strong>two countries</strong> and currently in use in <strong>five countries</strong>.</td>
</tr>
<tr>
<td>3.</td>
<td>It is a highly toxic compound.</td>
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<tr>
<td>4.</td>
<td>The studies on effect of subchronic doses of phosphamidon exposure on humoral and cell mediated immune (CMI) responses revealed marked suppression of humoral and CMI responses in a dose dependent pattern. Hence, suppression of immune responses by phosphamidon even at subchronic doses is clearly an important aspect for its safety evaluation (Suke et al., 2006). For details see Annexure – II.</td>
</tr>
<tr>
<td>5.</td>
<td>It is classified as ‘<strong>extremely hazardous</strong>’ under class Ia (WHO classification, 2009).</td>
</tr>
<tr>
<td>6.</td>
<td>The Rotterdam convention in Annexure III has listed it as a PIC (Prior informed consent) molecule.</td>
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<td><strong>phased out in five years (by 2020).</strong></td>
<td>(Reference: ECR, Volume-IV, pages:255-264)</td>
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<tr>
<td>recommendations and decided as under:</td>
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<td>(i)</td>
<td>No new certification of registration to manufacture shall be issued after December, 2017.</td>
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<td>(iii)</td>
<td>No person shall import, manufacture or formulate Phosphamidon w.e.f. 01/01/2019.</td>
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<td>(iv)</td>
<td>The use of Phosphamidon shall be completely banned w.e.f. 31/12/2020.</td>
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<td>(v)</td>
<td>All concerned including State Licensing Authorities should be communicated with the above decision of the Registration Committee through public notice and other suitable means.</td>
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<td>(vi)</td>
<td>Product is toxic to aquatic organisms hence, a cautionary statement should be incorporated on label leaflet that this product is</td>
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50. **Pretilachlor**  
(Herbicide)  

1. Pretilachlor is an herbicide registered during 1995 and approved for the control of weeds in rice, crop under the Insecticides Act, 1968.

2. It is **banned in Russia, withdrawn in EU and currently in use in 31 countries**, including China, Japan and Philippines.

3. The study undertaken on the recommendation of Dr. R.B. Singh Committee (1990) for pre marketing surveillance showed that Pretilachlor did not cause any allergic or skin irritating potential. The post marketing surveillance also showed that pretilachlor has no allergic and skin irritant effect on the workers at manufacturing plant level as well as at field.

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1. **Use of Pretilachlor is recommended to be continued.**

(Reference: ECR, Volume-II, pages:170-180)

The Committee accepted the recommendations and decided as under:

(i) Label Leaflets should bear cautionary statement indicating that the product is irritant to skin and eyes. Hence, contact to skin and eyes should be avoided.
**Minutes of 361st Special Meeting of RC held on 22nd December, 2015.**

| 51. | **Propargite**  
(Insecticide) | 1. | Propargite is an insecticide (miticide) registered during 2002 and approved for the control of mite pests in tea, chillies, apple and brinjal crops under the Insecticides Act, 1968.  
2. It is **banned in Pakistan, withdrawn in EU voluntarily and currently in use in 11 countries including Brazil, Argentina, Bangladesh and Kenya.**  
3. It is reported to be skin and eye irritant to rabbits, may cause dermatitis in human.  
4. It is highly toxic to rainbow trout and bluegill sunfish (aquatic organism).  
5. The review of literature revealed that Worker Health and Safety Branch of Cal/EPA Department of Pesticide Regulation, California has revised its exposure assessment for propargite that was performed over two decades ago when propargite was shown to produce moderate to severe dermal irritation in the rabbit and dermatitis in humans. Now the dermal absorption of propargite in humans is reported likely to be less than 17% over a 10- to 24-hour exposure period ([http://www.cdpr.ca.gov/docs/risk/rcd/propargite_ead_final.pdf](http://www.cdpr.ca.gov/docs/risk/rcd/propargite_ead_final.pdf)). It has also been reported safer to *Encarsia formosa*, a parasitoid of white fly, *Trialeurodes vaporariorum* (Gholamzadeh *et al.*, 2012). For details see **Annexure – II.**  
6. It is classified as ‘**slightly hazardous**’ under class III (WHO classification, 2009). |
| 52. | **Propineb**  
(Fungicide) | 1. | Use of Propineb is recommended to be continued.  
The Committee accepted the recommendations and decided as under:  
(i) A cautionary statement has to be incorporated in the label and leaflet that Propargite is very toxic to aquatic organisms hence should not be used near Water bodies, aquaculture or pisciculture area.  
(ii) Label leaflets should incorporate cautionary note that it is irritant to skin and eyes, hence personal protective covering to avoid contact with skin and eyes should be used. |
Minutes of 361st Special Meeting of RC held on 22nd December, 2015.

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<td></td>
<td>2. Fungal diseases are serious constraints in the labeled crops.</td>
<td>(i) A cautionary statement has to be incorporated in the label and leaflet that Propineb is highly toxic to aquatic organisms hence should not be used near Water bodies, aquaculture or pisciculture area.</td>
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<td>3. It is withdrawn in Sweden and currently in use in 102 countries.</td>
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<td>4. Based on studies safe waiting periods of 15 days for apple and 5 days for tomato has been suggested (Sharma et al., 2003). Ethylenethiourea (ETU) is a metabolite product of ethylenebisdithiocarbamates, whereas propylenethiourea (PTU) is a major metabolite and degradation product of propylenebisdithiocarbamate fungicide (Propineb). ETU and PTU are also synthesis contaminants in the commercial product. Both do not accumulate or persist in the environment, but can be toxic to fish and aquatic invertebrates at high concentrations. (<a href="http://www.cdc.gov/biomonitoring/ETUPTU_BiomonitoringSummary.html">http://www.cdc.gov/biomonitoring/ETUPTU_BiomonitoringSummary.html</a>). PTU is reported to have goitrogenic effects in rat, which is extremely sensitive due to its physiological specificities; but humans are much less sensitive. For details see Annexure – II.</td>
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<td>5. It is likely to be carcinogenic to humans according to EPA, US (Annual Cancer Report Oct. 2014).</td>
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<td>6. It is classified as 'unlikely to present acute hazard in normal use' under class U (WHO classification, 2009).</td>
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<td>53.</td>
<td><strong>Quinalphos</strong>  (Insecticide)</td>
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<td></td>
<td>1. Quinalphos is an insecticide registered before 1972 (DRP) and approved for the control of insect pests in chillies, paddy, sorghum, okra, cotton, tomato, tea, tur, groundnut, wheat, Bengal gram, black gram, French bean, red gram, soybean, jute, mustard, sesameum, cauliflower, apple, banana, citrus, pomegranate, cardamom, gram and safflower crops under the Insecticides Act, 1968.</td>
<td>1. Labels to have cautionary statement that application of Quinalphos should be avoided during active foraging period of bees.</td>
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<td>2. The studies related to</td>
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(i) A cautionary statement has to be incorporated in the label and leaflet that Propineb is highly toxic to aquatic organisms hence should not be used near Water bodies, aquaculture or pisciculture area.
2. It is restricted in Korea and currently in use in 28 countries.

3. Studies related to the neurotoxin concerns as recommended by Dr. C.D. Mayee Committee (2006), a report on the delayed Neuropathic and anticholinesterase potential of quinalphos in hens, published in J. Appl. Tox. 13(5):337-339 (1993) has been submitted by the industry. The studies were not undertaken by the industry. It only submitted an old reference of 1993.

4. The field study to address the effect of Quinalphos sprays on aquatic organisms as recommended by Dr. C.D. Mayee Committee (2006) has not been undertaken despite approval of protocol.

5. There is a need to take up studies on the efficacy and status of resistance/resurgence in target insects.

6. Waiting period is not defined for many approved crops.

7. It is highly toxic to honey bees.

8. The Quinalphos behaviour studied in tea soil showed that its dissipation followed first order reaction rate ranging between 1.28-4.95 days and dissipation was faster in wet season than in dry season (Guleria et al., 2012). The residue of Quinalphos was quantified in the samples of potato and tomato collected from farmer’s field in Bangalore. Out of 8 samples of potato in one sample residue was found above MRL while no residue was detected in tomato samples (Ramesh and Murthy, 2013). For details see Annexure –II.

9. It is classified as ‘moderately hazardous’ under class II neurotoxin concerns and aquatic organisms should be completed by the registrants and the report should be submitted latest by December 2017.

3. Industry should also take up study on the efficacy and build up of resistance/resurgence in the target polyphagous sucking pests like aphids, jassids, mites and thrips.

4. Residue data need to be generated by the Industry/Pesticide Associations, where waiting period is not defined and reports should be submitted by December 2017.

5. Use of Quinalphos is recommended to be continued, and to be reviewed in 2018.

(Reference: ECR, Volume-)

(ii) A warning may be incorporated in the label leaflet stating that this product is toxic to honey bees so do not spray during active honeybees foraging period of the day.

(iii) A cautionary statement has to be incorporated in the label and leaflet that Quinalphos is highly toxic to aquatic organisms, hence should not be used near water bodies, aquaculture or pisciculture area.

(iv) A statement has to be incorporate in label/leaflet that this product is highly toxic to birds.

(v) The pesticides to be invalid w.e.f. from 1st January, 2018 if studies as recommended by the Expert Committee is not submitted by December, 2017.
### Sodium cyanide (Insecticide)

1. Sodium cyanide is an insecticide registered during 1975 and approved for the control of rodent and soil insects in agriculture and grain storage under the Insecticides Act, 1968. Its use is restricted for fumigation of cotton bales under expert supervision approved by the Plant Protection Advisor.

2. At present cotton bales are not being fumigated by Sodium cyanide for quarantine purposes in India.

### Use of Sodium Cyanide is recommended to be banned.

(Reference: ECR, Volume-IV, pages:165-172)

The Committee accepted the recommendations and decided as under:

1. **Use of Sodium Cyanide is recommended to be banned.**

The Committee accepted the recommendations and decided as under:

(i) The registration, import and manufacture is prohibited henceforth and needs to be re-evaluated for their bio-efficacy and residue data against major target pests as per approved label claims and baseline toxicity data may be generated by the Industry Associations by December, 2017 otherwise the Certificate of Registration of the product deem cancelled w.e.f. 1st Jan 2018.

(vi) The residue/persistence data require to be generated by industry association for fixation of waiting period for Sorghum and Chilly crops.
3. It is banned in Panama and Russia, restricted in USA and India, and withdrawn in Cyprus.

4. It is highly toxic and its use is hazardous, as it releases hydrogen cyanide gas. It is reported that it may cause the thyroid gland to enlarge and interfere with normal thyroid function. Exposure can damage the nervous system and cause changes in the blood cell count (http://nj.gov/health/eoh/rtkweb/documents/fs/1693.pdf). It is also reported by WHO (2004) that the primary targets of cyanide toxicity in humans and animals are the cardiovascular, respiratory and central nervous systems. The endocrine system is also a potential target for long term toxicity, as a function of continued exposure to thiocyanate, which prevents the uptake of iodine in the thyroid and acts as a goitrogenic agent (http://www.who.int/ipcs/publications/cicad/en/cicad61.pdf).

5. It is classified as ‘highly hazardous’ under class Ib (WHO classification, 2009).

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55. Sulfosulfuron (Herbicide)

1. Sulfosulfuron is a herbicide registered during 2002 and approved for the control of weeds in wheat crop under the Insecticides Act, 1968.

2. It is banned in Norway and currently in use in 22

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1. Scientific multilocational studies (minimum 3) should be conducted to check the possible development of its use is completely banned w.e.f. 1st Jan 2018

(ii) Product is toxic to aquatic organisms hence, a cautionary statement should be incorporated on label leaflet that this product is toxic to aquatic organism hence should not be used near water bodies or pisciculture area.

(iii) A warning may be incorporated in the label leaflet stating that this product is toxic to honey bees so do not spray during active honeybees foraging period of the day

(iv) A statement has to be incorporated in label/ leaflet that this product is highly toxic to birds.

The Committee accepted the recommendations and decided as under:
countries.
3. Concern is raised that due to its continuous use since 2000, there would be some level of resistance/ tolerance in population of *Phalaris minor* in Punjab, Haryana and Tarai region of Uttarakhand. It is reported that population of *Phalaris minor* resistant to sulfosulfuron also showed cross-resistance to mesosulfuron and pyroxsulam (Chhokar et al., 2012). For details see Annexure – II.

56. **Thiodicarb**

1. Thiodicarb is an insecticide registered during 1998 and approved for the control of insect pests in cabbage, cotton, brinjal, chilli and black gram crops under the Insecticides Act, 1968.
2. It is banned in EU, restricted in Belize and currently in use in more than 45 countries.
3. Excessive use can cause resurgence in mites.
4. It is toxic to honey bees.
5. Thiodicarb and its metabolite Methomyl were not persistent in sandy loam soil; with half life periods 5.90 and 8.29 days (Bisht et al., 2015).
6. It is probably/likely carcinogen as per EPA, US.
7. It is classified as *moderately hazardous* under class II (WHO classification, 2009).

The Committee accepted the recommendations and decided as under:
(i) The Certificate of Registration of technical and its formulation deemed to be invalid w.e.f. from 1st January, 2018 if studies as recommended by the Expert Committee is not submitted by December, 2017. (reference: ECR, Volume-III, pages:351-362)

(ii) A warning may be
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| 57. | **Thiometon**  
(Insecticide) |   |
|   | 1. Thiometon is an insecticide registered before 1972 (DRP) and approved for the control of insect pests in **brinjal crop only** under the Insecticides Act, 1968.  
2. It is **banned in Russia**.  
3. Highly toxic to bees  
(http://pdf.usaid.gov/pdf_docs/pnabs215.pdf). The genotoxic effect of thiometon is confirmed by incidence of micronucleus in peripheral erythrocytes using sub-lethal concentrations against two species of fish (Malik and Ganie, 2011). For details see **Annexure – II**.  
4. It is classified as *‘highly hazardous’* under class **Ib** (WHO classification, 2009). | 1. Use of Thiometon is recommended to be banned.  
(Reference: ECR, Volume-IV, pages:173-180) |
|   | is recommended to be continued, and to be reviewed in 2018.  
(Reference: ECR, Volume-III, pages:363-374) | incorporated in the label leaflet stating that this product is toxic to honey bees so do not spray during active honeybees foraging period of the day.  
(iii)Product is toxic to aquatic organisms hence, a cautionary statement should be incorporated on label leaflet that this product is toxic to aquatic organism hence should not be used near water bodies or pisciculture area. |
|   | The Committee accepted the recommendations and decided as under:  
(i) The registration, import and manufacture is prohibited henceforth and its use is completely banned w.e.f. 1st Jan 2018  
(ii)A warning may be incorporated in the label |
|   | Thiophanate Methyl (Fungicide) | 1. Thiophanate methyl is a fungicide registered during 1989 and approved for the control of diseases in papaya, apple, tomato and bottle gourd crops under the Insecticides Act, 1968.  
   |   |   |   | 2. It is **banned in Denmark**, **restricted in Sweden** and **currently in use in 55 countries**.  
   |   | 3. Regarding multilocalational field studies (minimum three locations) in the workers of the manufacturing unit by the basic manufactures of Thiophanate-Methyl under supervision of National Institute of Occupational Health (NIOH), Indian Council of Medical Research (ICMR) suggested by Dr. C.D. Mayee Committee (2006), the concerned industry was asked to undertake study on thyroid function under the supervision of NIOH as per the protocol approved for Mancozeb by RC in its 342nd meeting. In response certain queries raised by industry were clarified & simultaneously requested vide letter no 07-02/2014-CIR-I dated 30/07/2014 to comply with decision of RC and intimate the progress.  
   |   | 4. It is found to have unacceptable persistence in soil and toxicity to earthworms.  
   |   | 5. The leaching potential, a measure of ground and leaflet stating that this product is toxic to honey bees so do not spray during active honeybees foraging period of the day.  
   |   |   |   | 1. The studies on thyroid function should be conducted by the Industry/Pesticide Associations urgently and report should be submitted by December 2017.  
   |   | 2. Multilocalational field studies on the effect of Thiophanate Methyl on earthworm should be undertaken by Industry/Pesticide Associations and report to be submitted by December 2017.  
   |   | 3. **Use of Thiophanate methyl is recommended to be continued, and to be reviewed in 2018.**  
   |   | (Reference: ECR, Volume-  
   |   |   |   | The Committee accepted the recommendations and decided as under:  
   |   | (i) The Certificate of Registration of technical and its formulation deemed to be invalid w.e.f. from 1st January, 2018 if studies as recommended by the Expert Committee is not submitted by December, 2017.  
   |   | (ii) A cautionary statement has to be incorporated in the label and leaflet that thiophanate methyl should is toxic to earthworm.
surface water contamination, of thiophanate methyl was evaluated in terms of groundwater ubiquity score (GUS) and the value obtained were in the range of 0.87 to 0.97, classifying it as non leaching pesticide (Sharma et al., 2015). For details see Annexure –II.

6. It is classified as ‘unlikely to present acute hazard in normal use’ under class U (WHO classification, 2009).
7. It is classified as probably/likely carcinogen by EPA, US.

59. **Thiram**  
(Fungicide)

1. Thiram is a fungicide registered before 1972 (DRP) and approved for the control of diseases in maize, groundnut, wheat, barley, sorghum, potato, rice and cotton under the Insecticides Act, 1968.
2. It is **banned in Germany, Denmark and Sweden, restricted in Korea and Russia** and currently in use in **31 countries**.
3. Use of Thiram is recommended for seed dressing only by Dr. R.B. Singh Committee (1999). The committee also recommended that industry may be asked to assess impact on environmental conditions like persistence in soil, water, etc, and submit to RC for evaluation within one year. Study has not been submitted.
4. May cause skin irritation.
5. It is classified as ‘moderately hazardous’ under class II (WHO classification, 2009).

III, pages:375-382)

1. **Industry/ Pesticide Associations must submit data on the persistence in soil and water by December 2017.**
2. Caution may be stated on the label/leaflets on safety of the workers for skin irritation.
3. **Use of Thiram is recommended to be continued, and to be reviewed in 2018.**

to be re-evaluated for their bio-efficacy and residue data against major target pests as per approved label claims and baseline toxicity data may be generated by the Industry Associations by December, 2017 otherwise the Certificate of Registration of the product deem cancelled w.e.f. 1st Jan 2018.

(iv) Label leaflet should incorporated a cautionary statement that workers/farmers handling Thiram should not consume alcohol within past 12 hours and 24 hours after handling.

(v) Product is toxic to aquatic organisms hence, a cautionary statement should be incorporated on label leaflet that this product is highly toxic to aquatic organism hence should not
Minutes of 361st Special Meeting of RC held on 22nd December, 2015.

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<td><strong>60. Triazophos (Insecticide)</strong></td>
<td>1. <strong>Triazophos</strong> is an insecticide registered during 1989 and approved for the control of insect pests in rice, cotton and soybean crops under the Insecticides Act, 1968.</td>
<td>1. Misuse, as shown by the residues in crops not listed in label claims, needs to be checked.</td>
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<td>The Committee accepted the recommendations and decided as under:</td>
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<td>2. <strong>It is banned in nine countries</strong> including EU, restricted in Korea and currently in use in 28 countries.</td>
<td>2. <strong>Use of Triazophos is recommended to be phased out in five years (by 2020).</strong></td>
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<td>3. Its residues were found in fruits and vegetables, which are not listed in label claims (AINPPR, New Delhi). For details see <strong>Annexure – II.</strong></td>
<td>(Reference: ECR, Volume-IV, pages:265-280)</td>
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<td>4. The studies on the effects of triazophos on enzymatic activities of soil microorganisms in paddy cultivated soils showed significant decrease in soil enzyme activities (dehydrogenase and urease) up to third and fourth week of treatment (Kalyani et al., 2015). Triazophos 40% EC has been reported equally effective to new insecticides, viz., Dithionfurton 50% WP, Profenophos 50% EC, Lambdaacyhalothrin 5% EC and Emamectin Benzoate 5% SG against soybean pests (Vikram et al., 2012). For details see <strong>Annexure – III.</strong></td>
<td>(ii)No person shall import, manufacture or formulate Triazophos w.e.f. 01/01/2019.</td>
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<td>5. It is classified as ‘highly hazardous’ under class Ib (WHO classification, 2009).</td>
<td>(iii)The use of Triazophos shall be completely banned w.e.f. 31/12/2020.</td>
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<td>(iv)All concerned including State Licensing Authorities should be communicated with the above decision of the Registration Committee through public notice and other suitable means.</td>
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<td>(v) Product is toxic to be used near water bodies or pisciculture area.</td>
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| 61. | **Trichlorfon** (Insecticide) | 1. Trichlorfon is an insecticide registered before 1972 (DRP) and approved for the control of insect pests in castor, groundnut, wheat, brinjal, cabbage, cauliflower, cucurbits and tomato crops under the Insecticides Act, 1968.  
2. It is **banned in Kuwait and European Community, restricted in Indonesia and USSR and currently in use in 22 countries.**  
3. It is approved for the control of important pests of aquatic organisms hence, a cautionary statement should be incorporated on label leaflet that this product is toxic to aquatic organism hence should not be used near water bodies or pisciculture area.  
(vi) A warning may be incorporated in the label leaflet stating that this product is toxic to honey bees so do not spray during active honeybees foraging period of the day  
(vii) The product is highly toxic to birds hence label leaflet should incorporate a cautionary statement. | 1. **Use of Trichlorfon is recommended to be phased out in five years (by 2020).**  
(Reference: ECR, Volume-IV, pages:281-288)  
The Committee accepted the recommendations and decided as under:  
(i)No new certification of registration to manufacture shall be issued after December, 2017. |
many crops like pod borer in castor, red hairy caterpillar in groundnut, army worm and cut worm in wheat, red pumpkin beetle in cucurbits for which alternative insecticides are limited.

4. A breakdown product of Trichlorfon is Dichlorvos (DDVP), which is highly toxic and possible carcinogenic.

5. It is stated to be highly toxic to bees in the PAN International list of highly hazardous pesticides (June 2015).

6. It is classified as ‘**moderately hazardous**’ under class II (WHO classification, 2009).

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<td>(ii)No person shall import, manufacture or formulate Trichlorfon w.e.f. 01/01/2019.</td>
<td>(iii)The use of Trichlorfon shall be completely banned w.e.f. 31/12/2020.</td>
<td>(iv)All concerned including State Licensing Authorities should be communicated with the above decision of the Registration Committee through public notice and other suitable means.</td>
</tr>
<tr>
<td>(v) Product is highly toxic to aquatic organisms hence, a condition should be incorporated on label leaflet that this product is toxic to aquatic organism hence should not be used near water bodies or pisciculture area.</td>
<td>(vi) A cautionary statement should incorporate on label leaflet</td>
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### 62. Tridemorph (Fungicide)

1. Tridemorph is a fungicide registered during 1978 and approved for the control of diseases in groundnut, mango, vegetables and rose under the Insecticides Act, 1968.
2. It is **banned in Russia** as Tridemorph is embryo toxic and teratogenic.
3. Tridemorph is reported toxic to amphibians, fish and crustaceans (Cruz et al., 2014). A possible risk of harm to the unborn child has been identified, if the mother is exposed to tridemorph while working with the chemical. It is also irritating to eyes and skin (http://www.pan-uk.org/pestnews/Actives/tridemor.htm). For details see **Annexure – II**.
4. It is classified as ‘**moderately hazardous**’ under class II (WHO classification, 2009).

1. **The use of Tridemorph is recommended to be banned.**

(Reference: ECR, Volume-IV, pages:181-188)

The Committee accepted the recommendations and decided as under:
(i) The registration, import and manufacture is prohibited henceforth and its use is completely banned w.e.f. 1st Jan 2018

### 63. Trifluralin (Herbicide)

1. Trifluralin is a pre-emergence herbicide registered for the control of weeds in cotton and soybean crops under the Insecticides Act, 1968.
2. It is **banned in five countries (including EU)**.
3. Unacceptable persistence in soil, highly toxic and harmful to human health.
4. It is reported that trifluralin can affect when inhaled. It can irritate the skin, eyes, nose and throat. Skin contact can cause a rash that is made worse by exposure to sunlight. High or repeated exposure may affect the liver and kidneys and may cause anemia (http://nj.gov/health/eho/rwkweb/documents/fs/1918.pdf). For

1. **The use of Trifluralin is recommended to be banned.**

(Reference: ECR, Volume-IV, pages:189-198)

The Committee accepted the recommendations and decided as under:
(i) The registration, import and manufacture is prohibited henceforth and its use is completely banned w.e.f. 1st Jan 2018
(ii) Product is toxic to aquatic organisms hence, a condition should be
5. It is classified as ‘unlikely to present acute hazard in normal use’ under class U (WHO classification, 2009).

64. **Zinc Phosphide (Insecticide)**

1. Zinc phosphide is an insecticide (rodenticide) registered before 1972 (DRP) and approved for the control of rodents in field and residential premises under the Insecticides Act, 1968.
2. It is banned in **four countries** (Belize, Kuwait, Libyan Arab Jamahiriya and Portugal); **restricted in China and Germany; withdrawn in Cyprus**. It is **currently in use in 35 countries**, including USA, UK, Philippines and Australia.
3. The environmental, cultural, biological, mechanical and chemical methods of rodent control have been reviewed and emphasized that rodenticides form the major component of rodent control strategies in India. The burrow application of 2% Zinc phosphide bait may result in about 80% rodent control (Parshad, 1999). Though suicidal cases with Zinc phosphide are on record (Gokdemir et al., 2013) but a long list of significant characteristics contributes to its relative safety to non-target species (humans, most livestock, wildlife and general lack of potential secondary hazard to predators and scavengers). Zinc phosphide's favourable characteristics support its continued use (Marsh, 1987). For details see Annexure – II.

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<td>1. A study on the mode of action of Zinc phosphide/phosphine to find out a good antidote for treatment of poisoning needs to be taken up urgently.</td>
<td>Accepted the recommendation of the committee that use of Zinc phosphide for rodent management to be continued strictly under the supervision of trained personnel. A study also require on the mode of action of Zinc phosphide/phosphine to find out a good antidote for treatment of poisoning to be undertaken by the industry Association and progress report may be submitted every six months i.e. in June and</td>
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<tr>
<td>64. <strong>Zinc Phosphide</strong> (Insecticide)</td>
<td>2. <strong>Use of Zinc Phosphide for rodent management to be continued strictly under the supervision of trained personnel.</strong></td>
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<td>(Reference: ECR, Volume-II, pages:205-218)</td>
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<td>details see <strong>Annexure II</strong>.</td>
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<td>incorporated on label leaflet that this product is toxic to aquatic organism hence should not be used near water bodies or pisciculture area.</td>
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### Minutes of 361st Special Meeting of RC held on 22nd December, 2015.

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<tr>
<td><strong>4.</strong> In an earlier review by Dr. S.N. Banerjee Committee, recommended “an urgent need to undertake research on the mode of action of Zinc phosphide/phosphine to find out a good antidote for treatment of poisoning”, but this study has not been taken up.</td>
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<td><strong>5.</strong> It is classified as ‘highly hazardous’ under class Ib (WHO classification, 2009).</td>
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<tr>
<td><strong>65.</strong> Zineb (Fungicide)</td>
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<tr>
<td><strong>1.</strong> Zineb is a dithiocarbamate fungicide registered before 1972 (DRP) and approved for the control of diseases of jowar, paddy, wheat, maize, ragi, bajra, tobacco, onion, potato, tomato, chillies, brinjal, cucurbits, cauliflower, cumin, apple, citrus, cherries, grapes and guava crops under the Insecticides Act, 1968.</td>
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<tr>
<td><strong>2.</strong> It is <strong>banned in Equador and Pakistan, withdrawn in USA, Korea and EU and currently in use in 9 countries.</strong></td>
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<tr>
<td><strong>3.</strong> Investigation whether affect of Mancozeb on iodine metabolism affects the thyroid profile of workers as recommended by Dr. C.D. Mayee Committee (2006) for Mancozeb, needs to be done.</td>
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<tr>
<td><strong>December.</strong></td>
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<tr>
<td><strong>(i)</strong> Product is highly toxic to aquatic organisms hence, a condition should be incorporated on label leaflet that this product is toxic to aquatic organism hence should not be used near water bodies or pisciculture area.</td>
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<tr>
<td><strong>(ii)</strong> The product is highly toxic to birds hence label leaflet should incorporate a statement that avoid use near bird habitat.</td>
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<tr>
<td><strong>1.</strong> Ethylene Thio Urea (ETU) content should not be &gt;0.5% technical or formulation.</td>
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<tr>
<td><strong>2.</strong> As required for mancozeb, studies on iodine metabolism to be done by Industry/ Pesticide Associations and report to be submitted by December.</td>
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<td><strong>The Committee accepted the recommendations and decided as under:</strong></td>
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<td><strong>(i)</strong> The Certificate of Registration of technical and its formulation deemed to be invalid w.e.f. from 1st January, 2018 if studies as recommended by the Expert Committee is not submitted.</td>
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</tbody>
</table>
4. Waiting period is not defined for labeled crops.
5. It is classified as ‘unlikely to present acute hazard in normal use’ under class U (WHO classification, 2009).

2017.
3. Residue data need to be generated by the Industry/Pesticide Associations, where waiting period is not defined and reports should be submitted by December 2017.
4. Use of Zineb is recommended to be continued, and to be reviewed in 2018.
(Reference: ECR, Volume-III, pages:393-402)

(ii) Ethylene Thio Urea (ETU) content should not be >0.5% technical or formulation.
(vii) Product is toxic to aquatic organisms hence, a condition should be incorporated on label leaflet that this product is toxic to aquatic organism hence should not be used near water bodies or pisciculture area.

<table>
<thead>
<tr>
<th>66. Ziram (Fungicide)</th>
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</thead>
<tbody>
<tr>
<td>1. Ziram is a dithiocarbamate fungicide registered before 1972 (DRP) and approved for the control of diseases in grape, apple, potato and tomato crops under the Insecticides Act, 1968.</td>
</tr>
<tr>
<td>2. It is <strong>banned in Denmark and Russia</strong>, <strong>restricted in Sweden</strong> and <strong>currently in use in 31 countries</strong>.</td>
</tr>
<tr>
<td>3. Investigation whether affect of Mancozeb on iodine metabolism affects the thyroid profile of workers as recommended by Dr. C.D. Mayee Committee (2006) for mancozeb, needs to be done.</td>
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<tr>
<td>4. It is classified as ‘<strong>moderately hazardous</strong>’ under class II (WHO classification, 2009).</td>
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</tbody>
</table>

1. Ethylene Thio Urea (ETU) content should not be >0.5% in technical formulation.
2. As required for mancozeb, studies on iodine metabolism to be done by Industry/Pesticide Associations and report to be submitted by December 2017.

The Committee accepted the recommendations and decided as under:
(i) The Certificate of Registration of technical and its formulation deemed to be invalid w.e.f. from 1st January, 2018 if studies as recommended by the Expert Committee is not submitted by December, 2017.
3. Use of Ziram is recommended to be continued, and to be reviewed in 2018. (Reference: ECR, Volume-III, pages:403-413)

(ii) Ethylene Thio Urea (ETU) content should not be >0.5% technical or formulation.

(iii) The pesticides needs to be re-evaluated for their bio-efficacy and residue data against major target pests as per approved label claims and baseline toxicity data may be generated by the Industry Associations by December, 2017 otherwise the Certificate of Registration of the product deem cancelled w.e.f. 1st Jan 2018.

(iv) Product is toxic to aquatic organisms hence, a condition should be incorporated on label leaflet that this product is toxic to aquatic organism hence should not be used near water bodies or pisciculture area.
Agenda item No. 9.0  **MISCELLANEOUS ITEMS (HEAD 9.0)**

Agenda Item No. 9.1  Consideration of application for import permit of boric acid and other substances for non-insecticidal use.

**Decision of RC:** The agenda was deliberated in detail and the cases were approved as per Annexure - I.
## Decision of the Registration Committee on the applications for Import Permits for dual use of insecticides

### Applications for import of Boric Acid (Deferred agenda 360 RC)

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Applicant (M/s)</th>
<th>Decision of the Registration Committee</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.</td>
<td>M/s Welsuit Glass &amp; Ceramic Pvt. Ltd. Block No. 396/1 &amp; 497/1 village Achhod, Ta- Amod, Dist- Bharuch 392110 Lr. No. NIL Dated 05.11.2015.</td>
<td>Approved 2180 MT of Boric Acid for import (for one calendar year) in view of the recommendation of the nodal agency, last consumption pattern &amp; un-utilized stock (for Mfg. of Ceramics Glaze Mixture Frit).&lt;br&gt;&lt;br&gt;<strong>Source of Import:</strong>&lt;br&gt;1) Borochemie International Pte Ltd, 77, High Street, 09-06 High Street Plaza, Singapore-179433.&lt;br&gt;2) Rio Tinto Mineral Asia Pte. Ltd., 12,Marina Boulevard, # 20-01, Marina Bay Financial Center, Tower-3, Singapore-018982.&lt;br&gt;3) Trigon Gulf FZCU, PO Box No. 61468, Jebel Ali, Dubai</td>
</tr>
</tbody>
</table>
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3. M/S H&R Johnson (India) A Division of Prism Cement Ltd. Mumbai 7th Floor Windsor, CST Road, Kalina, Santacruz (E) Mumbai-98 Lr. No. NIL Dated 17.11.2015. Approved 500 MT of Boric Acid for import (for one calendar year) in view of the recommendation of the nodal agency, last consumption pattern & un-utilized stock (for Mfg. of Ceramics Frit).

Source of Import:
1) Borochemie International Pte Ltd, 77, High Street, 09-06 High Street Plaza, Singapore-179433.
3) Trigon Gulf FZO, PO Box No. 61468, Jebel Ali, Dubai- UAE

Part-III

Representations for Issuance of Import Permit for Dual Use Insecticides

<table>
<thead>
<tr>
<th>S No.</th>
<th>Applicant (M/s)</th>
<th>Decision of the Registration Committee</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>M/s Universal Speciality Chemicals (P) Limited, Unit No. 2, B/18 Taloja Indl. Area, MIDC, Tal-Panvel, Dist. Raigad. Lr. No. NIL dated 25 Nov. 2015</td>
<td>Approved 100 MT of Boric Acid (Balance Quantity) as per past allotment for import in view of the recommendation of the nodal agency, for Mfg. Of Disodium Octaborate and Disodium Tetraborate. The applicant is advised to apply afresh in the prescribed proforma after consumption of this 100 MT balance quantity.</td>
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<tr>
<td>2.</td>
<td>M/s Speed International India Pvt. Ltd. Plot No. 15, 16 &amp; 21/23, Old Swastika Soap Factory, MIDC, Morveli, Ambernath-West, Thane-421501 Lr. No. NIL Dated 24th Nov. 2015</td>
<td>Approved 250 MT of Boric Acid (Balance Quantity) as per past allotment (Import Permit No. 85/353RC/2015 dated 06.07.2015) for import in view of the recommendation of the nodal agency, CP (Chemically Pure)Grade Boric acid.</td>
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Part-I

Applications for import of Boric Acid (Special RC 361)

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<tr>
<th>S.</th>
<th>Applicant (M/s)</th>
<th>Decision of the Registration Committee</th>
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Minutes of 361st Special Meeting of RC held on 22nd December, 2015.

<table>
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<tr>
<th>No.</th>
<th>Approved 190 MT of <strong>Boric Acid</strong> for import (for one calendar year) in view of the recommendation of the nodal agency, last consumption pattern &amp; un-utilized stock (BF 3 Complex, Potassium Fluoborate, Fluoboric Acid)</th>
</tr>
</thead>
</table>
| 1.  | M/s Tanfac Industries Ltd. 14, Sipcot Industrial Complex Cuddalore 607005, Tamilnadu  
Lr. No. Nil  
Source of Import:  
1.) M/s Inkabor S.A.C  
Av. Itallia 101 Parque Industrial Rio Seco Cerro Colorado, Arequipa Peru  
2.) M/s Borochemie International PTE Ltd  
77, High Street Road #0-09, High Street Plaza Singapore 179 433  
3.) M/s Quiborex S.A  
Av. Alonso De Cordova 2700, Suite 31, Vitacura, Santiago Chile. |

**Part – II**

Applications for import of multi-use insecticides (Other than Boric Acid) Special RC

<table>
<thead>
<tr>
<th>No.</th>
<th>Approved 155 MTs of <strong>Sodium Cyanide</strong> for import (for one calendar year) in view of the recommendation of the nodal agency, last consumption pattern &amp; un-utilized stock (for manufacturing of Phenyl Acetic acid, Phenyl Acetonitrile, potassium Phenyl Acetate etc.)</th>
</tr>
</thead>
</table>
| 1.  | M/s Chemtech Intermediates Pvt. Ltd. 406, Windsor Plaza, Alkapuri, Vadodara-390007, Gujarat, India  
Lr. No. CIPL/CIB&RC/2015-16/01  
Source of Import:  
1. M/s Hebei Chengxin Co. Ltd.  
Huanzhao Road, Yuanshi Country, Hebei Province China |
Lr. No. Nil  
Dt. 26.11.2015  
Source of Import:  
Approved 260 MTs of **Sodium Cyanide** for import (for one calendar year) in view of the recommendation of the nodal agency, last consumption pattern & un-utilized stock (for manufacturing of Drugs And Pharmaceutical Intermediates) |
Minutes of 361\textsuperscript{st} Special Meeting of RC held on 22\textsuperscript{nd} December, 2015.

<table>
<thead>
<tr>
<th>Source of Import: -</th>
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</table>
| 1. Exporter: | M/s Sojitz Corporation  
1-1, Uchisaiwaicho 2- Chome Chiyoda- Ku, Tokyo 100-8691 Japan |
| Manufacturer: | M/s Nippon Soda Co. Ltd.  
Shin- Ohtemachi Bldg.,2-1 2- Chome Ohtemachi Chiyoda- Ku, Tokyo 1008165, Japan |
| 2. Exporter: & Manufacturer: | M/s Hebei Chengxin Co. Ltd.  
Huanzhao Road, Yuanshi County, Hebei Province China |
| 3. Exporter: | M/s OCI Corporation 16\textsuperscript{th} Fl. Ferrum Tower, 19 Euljiro 5 GIL Suha-Dong, Jung-Gu, Seoul, South Korea |
| Manufacturer: | M/s Taekwang Industrial Co. Ltd,  
Taekwang Building, 162-1, Jangchung-Dong, 2GA, Jung-Gu, Seoul, South Korea |
| 4. Exporter & Manufacturer: | M/s Imperial Chemical Corporation  
No.3 Hsing Kung Road, Ta-she Industrial Park, Kaohsiung Hsiang, Taiwan. |
| 5. Exporter & Manufacturer: | M/s Mitsui & co. 2-1, Ohremachi, 1-chome, Chiyoda-ku, Tokyo, Japan. |

3. M/s Jaggo Overseas,  
B 35/3A G.T. Karnal Road Industrial Area Delhi 110033  
Lr. No. Nil  
Dt. 16.12.2015  
Approved 1120 MTs of Sodium Cyanide for import (for one calendar year) in view of the recommendation of the nodal agency, last consumption pattern & un-utilized stock (for manufacturing of Drugs And Pharmaceutical Intermediates)

Source of Import: -

1. M/s Anhui Anqing Shuguang Chemical Co. Ltd,  
47 Jinbei Road Anhui China