Endosulfan in Brief

Pesticide Action Network (PAN) & International POPs Elimination Network (IPEN)
September 2010

The organochlorine insecticide endosulfan is entering the final stages of consideration for listing under the Stockholm Convention on Persistent Organic Pollutants for global elimination. PAN and IPEN support the elimination of endosulfan.

1. Endosulfan is a Persistent Organic Pollutant (POP)

Endosulfan satisfies POPs criteria of persistence, bioaccumulation, long-range transport, and toxicity. In 2009 the POPs Review Committee (POPRC) concluded that "... *endosulfan is likely, as a result of its long-range environmental transport, to lead to significant adverse human health and environmental effects, such that global action is warranted*". The POPRC stated that "*Human fatality and chronic poisoning cases, and severe environmental degradation have been reported*" and that endosulfan is "*highly toxic for humans and most animal groups, showing both acute and chronic effects at relatively low exposure levels*".

2. Number of countries that have banned endosulfan = 69[1]

This includes at least 40 developing and transition countries that eliminated use of endosulfan on crops such as cotton and coffee. For example alternatives to endosulfan are used for pest control on cotton and vegetables in West Africa; on vegetables, rice, and tea in Sri Lanka; and on coffee, soy, flowers, and other crops in Latin America. Recently Brazil, Canada, Jamaica, Morocco, and USA all banned endosulfan for various reasons including the inability to use it safely without risk to the applicator and the environment, including the Arctic.

3. Endosulfan and sustainable agriculture

Endosulfan is toxic to bees and many beneficial insects; hence it is not compatible with true Integrated Pest Management or sustainable agricultural production.

4. Alternatives to endosulfan are available and technically feasible

Alternatives exist for a wide range of crop-pest complexes and for each specific crop-pest complex an appropriate combination of chemical, biological and cultural control action may be taken. A considerable number of biological and agroecological control measures, semio-chemicals, and almost 100 chemical alternatives (including plant extracts) have been identified for a very wide range of applications and geographical situations, including for rice, tea, cotton, soy, coffee, wheat, and sugar in regions where these crops are widely grown. According to the results of a screening risk assessment, alternatives are generally considered safer than endosulfan. Non-chemical alternatives generally have no or low risk.

5. Alternatives to endosulfan are economically feasible

There are economically acceptable methods of managing all pests without endosulfan. Implementing substitutes has been found to result in either very small increases in costs, no

[1] Austria, Bahrain, Belgium, Belize, Benin, Brazil, Bulgaria, Burkina Faso, Canada, Cambodia, Cap-Vert, Colombia, Cote d'Ivoire, Croatia, Cyprus, Czech Republic, Denmark, Egypt, Estonia, Finland, France, Gambia, Germany, Greece, Guinea Bissau, Hungary, Indonesia, Ireland, Italy, Iran, Jamaica, Jordan, Kuwait, Latvia, Liechtenstein, Lithuania, Luxembourg, Malaysia, Mali, Malta, Mauritius, Mauritania, Morocco, Netherlands, New Zealand, Niger, Nigeria, Norway, Oman, Poland, Portugal, Qatar, Romania, Saudi Arabia, Senegal, Singapore, Slovakia, Slovenia, Spain, Sri Lanka, St Lucia, Sweden, Switzerland, Syria, Tchad, United Arab Emirates, United Kingdom, USA, Venezuela

additional costs, projected reduction in costs, or actual increases in farmers' incomes. A World Bank study of 1.36 million acres in India found that replacement of endosulfan with alternative practices significantly reduced costs and increased farmers' incomes. Any additional costs in implementing substitutes for endosulfan need to be considered against the substantial costs to human health and environment from its ongoing use. Health costs in just one state of India (Kerala) resulting from exposures to endosulfan have been substantial and continue to rise, even after endosulfan use has ceased.

6. Multi-lateral action on endosulfan and other POPs is consistent with international law

WTO law applies to trade-related actions taken by individual WTO members; it does not govern multilateral environmental agreements. WTO case law and other multilateral agreements support the principle that MEAs embody the cooperative efforts of the international community and thus dispel fears of disguised protectionism. The Endosulfan Draft Risk Management Evaluation prepared by the POPRC has identified that "*a harmonized ban on production and use would contribute to balanced agricultural markets"*

7. Endosulfan should be listed in the Stockholm Convention

POPRC 6 should recommend to the Conference of the Parties the listing of endosulfan in Annex A for elimination of all production and uses without any specific exemptions.

Case studies:

1. Cotton – India

Global organic cotton production is booming, with India providing half of the world's organic cotton output. There endosulfan has been replaced by managing pests with varietal selection, crop rotation, intercropping with maize and pigeon peas as trap crops, use of flowering plants like marigold and sunflower to attract beneficial insects, use of the parasitic wasp *Trichogramma*, and use of botanical pesticides. Organic cotton output in India increased by 292% in 2007-8.

2. Coffee - Mexico

In 2005, Mexico had 123,000 producers of organic coffee, representing about 19% of the total land area grown in coffee, with this increasing to 25% in 2008. They do not use endosulfan. Coffee berry borer is the main pest. Main alternatives to endosulfan are the fungus *Beauvaria bassiana*; parasitic wasps *Cephalonomia sephanoderis*, *Prorops nasuta* and *Phymastichus coffea*; and neem.

3. Vegetables – Cuba

In Cuba, the parasitic wasp *Trichogramma* is used on approximately 777,000 hectares against lepidopteran pests of tomato, peppers, curcubits and tobacco as a substitute for endosulfan. Other parasitoids *Telenomus* spp, *Euplectrus plathyhypenae*, *Tetrastichus howardii* Ollif and *Tetrastichus* spp are used variously for corn, garlic, onion, peppers, tomatoes, potato, and curcubits as substitutes for endosulfan.

4. No increased costs - Sri Lanka

In 1995 and 1998 Sri Lanka banned endosulfan, monocrotophos and methamidophos because they were common causes of severe poisoning. There followed a large reduction in fatal poisoning but no reduction in productivity and no sudden changes in cost of production.[2]

[2] Manuweera G, Eddleston M, Egodage S, Buckley NA. 2008. Do targeted bans of insecticides to prevent deaths from self-poisoning result in reduced agricultural output? *Environ Health Perspect* 116(4):492-5