# Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade

**Chemical Review Committee**
**Seventh meeting**
Rome, 28 March–1 April 2011

## Report of the Chemical Review Committee on the work of its seventh meeting

## Annex IV

## Rationales, draft decisions and workplans for severely hazardous pesticide formulations for which proposals met the criteria of Annex IV

### I. Rationale for the recommendation by the Chemical Review Committee to list paraquat dichloride (formulated as emulsifiable concentrate of 276 g active ingredient/L or above, corresponding to paraquat ion at or above 200 g/L) in Annex III to the Rotterdam Convention as a severely hazardous pesticide formulation

1. The proposal submitted by Burkina Faso referred to the formulation Gramoxone Super (200 g/L emulsifiable concentrate). This is an emulsifiable concentrate of 276 g paraquat dichloride/L (CAS 4685-14-7), corresponding to paraquat ion at 200 g/L (CAS 1910-42-5).

2. The proposal and supporting documentation were made available to the Chemical Review Committee for its consideration in documents UNEP/FAO/RC/CRC.7/11+corr.1 and Add. 1 to 6.

3. Gramoxone Super (200 g/L EC) was used in Burkina Faso as a total herbicide in cotton, rice and maize once at the beginning of the season with a dosage of 2 to 3 litres/hectare.

4. Incidents were reported (survey of farmers) involving 53 males between 29 and 65 years old who had applied the product in the field. The incidents occurred from 1996 to2010 in three provinces of Burkina Faso (Boucle du Mouhoun, Cascades and Hauts Bassins).

5. The product was applied using backpack sprayers. In many cases, little or no personal protective equipment (PPE) was worn as a result of various factors, such as a lack of financial means to acquire it, the inappropriateness of PPE for local climatic conditions and an underestimation of the dangers of pesticides.

6. The adverse effects appeared immediately to several hours after the application of the pesticide. Symptoms reported included headaches, excessive sweating, itching, tingling, burning of the skin, skin rashes and sores, complete destruction of contaminated areas, fever, dizziness, bone pain, loss of consciousness, breathing difficulties, cough, vision troubles, eye pains, ringing in the ears, abdominal pain, nausea, vomiting and lockjaw. In 15 cases, the treatment was unknown, whereas treatment was administered in 26 cases, and in

an additional 11 cases hospitalization was required. A detailed report of the survey undertaken in three regions of Burkina Faso on intoxications due to agricultural pesticides is available.[1]

5. The documentation required according to part 1 of Annex IV to the Convention was submitted by Burkina Faso in its proposal and published in PIC Circular XXXII (12, Dec. 2010).

6. The information collected by the Secretariat according to part 2 of Annex IV to the Convention was submitted by parties and observers and was made available to the Committee in document UNEP/FAO/RC/CRC7/11/Add.1–6.

## 1. Criterion Annex IV, part 3 (a)

*In reviewing the proposals forwarded by the Secretariat pursuant to paragraph 5 of Article 6, the Chemical Review Committee shall take into account:*

*(a) The reliability of the evidence indicating that use of the formulation, in accordance with common or recognized practices within the proposing Party, resulted in the reported incidents;*

7. The Pilot Study on Agricultural Pesticide Poisoning in Burkino Faso clearly describes the common and recognized pesticide application practices in the field in Burkina Faso. Gramoxone Super is reported to be used in the field on cotton, rice and maize once at the beginning of the season and is applied by means of backpack sprayers at rates of 2 to 3 L/ha. The average duration of the operator's exposure during agricultural use as found in the Pilot study was 3½ hours/hectare on an average area of 2 hectares/farm, for a total of 7 hours of exposure during an average of 1½ to 2 days of treatment.

8. The common practices regarding use of PPE (personal protective equipment) in Burkina Faso were as follows: Only 20 per cent of pesticide distributors also sell protective equipment (dust masks, boots and gloves in particular) to the farmers; limited use of PPE by farmers: dust masks (39 per cent), boots (29 per cent), suits (5 per cent). Around 13 per cent use both dust masks and boots, whereas around 1 per cent use gloves, boots, suits, dust masks and glasses at the same time. The combination of chemical cartridge respirator, gloves, boots, suit and glasses was used in 0.3 per cent of cases.

9. Most farmers in Burkina Faso are illiterate and not able to read label instructions. In addition, pesticide distributors and vendors lack the necessary knowledge and training and are therefore unable to provide proper advice to customers. There is also a lack of financial means to buy PPE. PPE is often not available on local markets and is generally not adapted to local weather conditions.

10. With regard to Gramoxone Super, incidents were reported involving 53 farmers who had applied the product in the field using backpack sprayers. In many cases, little or no PPE was worn as a result of various factors explained above, such as a lack of financial means to acquire it, the inappropriateness of PPE for local climatic conditions and an underestimation of the dangers of pesticides.

11. The Committee concluded that evidence indicating that the use of Gramoxone Super, in accordance with common and recognized practices within Burkina Faso, resulted in the reported incidents was reliable and, taking into account this criterion, concluded that it was met.

## 2. Criterion Annex IV, part 3 (b)

*The relevance of such incidents to other States with similar climate, conditions and patterns of use of the formulation;*

[1] www.pic.int/mbg.php?sid=2&pf=3&Mtype=99999&Regn=0&Ctry=75.

12. Abundant documentation was available to the Committee demonstrating that the above listed conditions for Burkina Faso were similar to the conditions prevailing in other States and regions. For example, a study was reported from Senegal presenting information on chemical pesticide poisoning incidents. Data were analysed from 166 poisoning incidents, 59 per cent of which were related to pesticide applications in the field. Inappropriate application practices (lack of PPE) were identified as the main reason for those incidents. A report from the Niger identified the following operator exposure risks with respect to pesticide use in that country (among others): lack of use of PPE, illiteracy, attitude, application under inappropriate conditions such as excessive wind. The conditions of pesticide use and the climate in neighbouring countries the Niger and Senegal can be considered to be similar to those of Burkina Faso. Documentation is available from other regions, including on intoxications from occupational exposure in Costa Rica, attributable to leaking backpack sprayers among other causes. Especially in Costa Rica`s banana plantations, Gramoxone is reported as a frequent cause of occupational accidents. In a contribution from Chile, 43 acute occupational poisoning incidents with paraquat formulations from 2004 to 2009 were reported, although full PPE is mandatory in that country. In El Salvador between 289 and 402 (average 344) intoxications due to Gramoxone are reported per year from 2005–2010. Further examples are provided in document UNEP/FAO/RC/CRC.7/11/Add.2 and 3.

13. The Committee concluded that there was convincing evidence that the incidents reported by Burkina Faso were relevant to other States with similar climate, conditions and patterns of use of the formulation, and therefore that the criterion was met.

### 3. Criterion Annex IV, part 3 (c)

*The existence of handling or applicator restrictions involving technology or techniques that may not be reasonably or widely applied in States lacking the necessary infrastructure;*

14. Handling or applicator restrictions for the use of paraquat products have been provided by various parties (UNEP/FAO/RC/CRC.7/11/Add.2 and 3). They include, for example, such instructions as “Wear coveralls over a long-sleeved shirt and long pants during application with a backpack sprayer” and “Do not use damaged sprayers”. The product label contains precautionary advice to keep the product under lock and key, not to use mist blowers, to use only backpack or draw sprayers, not to smoke, eat or drink during use of the product, to wear glasses, boots and synthetic rubber gloves, to avoid entering a treated plot within 24 hours after application of the product and to avoid any contact with spray mixture.

15. Evidence is provided by Burkina Faso and other parties that the majority of farmers in many developing countries do not use PPE (see also paragraphs 8–10), are illiterate and are unaware of the risks posed by pesticides. Reports are available about defective sprayers; more than half of the sprayers in use in Cameroon, for example, are damaged. In Brazil 80 per cent of sprayers are reported to have deficiencies, while in Costa Rica it is reported to be 58 per cent. Frequently leaking sprayers are also reported from China. A survey in Cameroon revealed that 85 per cent of the farmers there do not use PPE, and in particular 80 per cent of operators wear no boots. In Zimbabwe, the use of PPE was reported to be low, partly because the benefits of such equipment did not seem overwhelming and use of the equipment was associated with discomfort, high cost and maintenance. In Nicaragua field workers usually get no appropriate instructions (UNEP/FAO/RC/CRC7/11/Add.3).

16. Taking into account the information available, the Committee concluded that the criterion was met.

**4. Criterion Annex IV, part 3 (d)**

*The significance of reported effects in relation to the quantity of the formulation used;*

17. In Burkina Faso Gramoxone Super is reported to be used in the field on cotton, rice and corn once at the beginning of the season at rates of 2 to 3 L/hectare. The average duration of exposure was 3½ hours/hectare on an average area of 2 hectares/farm, for a total of 7 hours of exposure during an average of 1½ –2 days of treatment.With regard to incident frequency rate, Gramoxone Super alone has been implicated in 53 intoxication incidents and is the product that has caused the greatest numbner of health problems among agricultural producers in Burkina Faso. Of 153 pesticide formulations identified in the survey and 296 poisoning incidents from field application, Gramoxone Super was responsible for 20 per cent of intoxications.This is due to the high toxicity of paraquat. Exposure through dermal or ocular contact, inhalation or ingestion may readily lead to systemic intoxication. Exposure to small amounts of paraquat, for example through ingestion of inhaled spray droplets, eating food that has been in contact with contaminated hands, or absorption through damaged skin when insufficient PPE is used, can cause systemic intoxication. In case of intoxication, no antidote or cure exists.

18. In a study performed in Costa Rica, eleven knapsack spray operators using Gramoxone at four banana plantations were studied. Between 22 litres with a concentration of 0.2 per cent and 42 litres with a concentration of 0.1 per cent spray solution were sprayed per working hour. Of the 11 spray operators under study, seven reported having had one or more health problems in the preceding 12 months that were thought to have been related to paraquat exposure. Dermal and respiratory exposure was measured with skin pads and personal air sampling, and internal exposure by urine sampling.In Costa Rica in 2001, paraquat was identified as causal agent in 127 cases out of 544 notified pesticide poisonings. Seventeen of the cases were attributable to occupational exposure (24 unknown). Paraquat was also the leading active ingredient for severe and moderate poisonings. In Costa Rica, total actual dermal exposure of applicators to paraquat in banana plantations, assessed by skin pads in 1995, varied between 35–1130 mg/kg or 2–57 mg/h. The number of pesticide poisonings and incidents per million inhabitants are reported for several countries in document UNEP/FAO/RC/CRC7/11/Add.3. In El Salvador, approximately 2 million litres of paraquat formulations are imported each year and between 289 and 402 (average 344) incidents were reported each year from 2005–2010. Tthis corresponds to 172 incidents per 1 million litres.

19 Taking into account the information available, the Committee concluded that the criterion was met.

**5. Criterion Annex IV, part 3 (e)**

*That intentional misuse is not in itself an adequate reason to list a formulation in Annex III.*

20. The reason for the proposal to list Gramoxone Super in Annex III was the occurrence of a number of poisoning incidents during the agricultural use of Gramoxone Super (operator exposure) in the field under conditions of use that are reported to be common in Burkina Faso. Intentional misuse was not reported to be a reason for the proposal.

21. Taking into account the information available, the Committee concluded that the criterion was met.

22. The Committee concluded at its seventh session that the proposal from Burkina Faso to list Gramoxone Super (paraquat dichloride formulated as emulsifiable concentrate of 276 g active ingredient/L, corresponding to paraquat ion at 200 g/L) in Annex III to the Convention as a severely hazardous pesticide formulation met the documentation requirements of part 1 of Annex IV and all criteria set out in part 3 of Annex IVto the

Convention, considering the information collected by the Secretariat in accordance with part 2 of Annex IV

23. The Committee therefore recommends that paraquat dichloride formulated as emulsifiable concentrate of 276 g active ingredient/L or above, corresponding to paraquat ion at or above 200 g/L (CAS 4685-14-7, 1910-42-5), be included in Annex III of the Rotterdam Convention as a severely hazardous pesticide formulation.