PERMANENT INTERSTATE COMMITTEE FOR DROUGHT CONTROL IN THE SAHEL

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Composition of the Registration dossier for Pesticides used in Public health

July 2009 Version

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The composition of the registration dossier for pesticides used in Public health in the Sahel is set as it follows:

1. a request for registration of the formulated product duly filled, dated and signed by the applicant;

2. a summary of all the dossier presented;

3. a physico-chemical dossier

4. a biological effectiveness dossier

5. an analytical dossier;

6. a toxicological dossier;

7. an environmental dossier;

8. a residue dossier;

9. a packing and labeling dossier

10 an attestation or a registration certificate of the product in the country of origin if available;

11. a sample for analysis of the pure active ingredient, of the active ingredient of technical quality, the standards for the analysis of the characteristic metabolites and other components included in the residues and, if possible of the samples of the substances of reference for the impurities contained in the formulated product (at the request of the Sahelian Committee for Pesticides);

12. a sample of the formulated product (at the request of the Sahelian Committee for Pesticides).

All documents referred under items 1 to 10 will be provided in two specimens and will be written in French language (in default case in English language). The samples referred under items 11 and 12 will be sent to the Sahelian Committee for Pesticides only to its specific request.

When the manufacturer of the formulated product is not the manufacturer of the active ingredient, an original letter of agreement of this last one must be joined to the dossier. It will mention the agreement of the manufacturer of the active ingredient to cite the data presented by the applicant.

The provisions for file confidentiality are described in Articles 16 and 17 of the common regulation for

the registration of pesticides in cilss member states (revised version, December 1999) whose contents are as follows:

Article 16

The data provided by the applicant, in accordance with the registration dossier for pesticides in the Sahel, cannot be used to the benefit of another applicant, unless the first applicant agrees with this other applicant that the information may be used.

Article 17

17.1 The applicant, in submitting the registration dossier, can mark the parts of the dossier which, in his opinion, represent or contain industrial or commercial secrets. The CSP and the Member States ensure that such information, considered as industrial or commercial secrets, remains confidential.

17.2 This confidentiality does not apply:

i .to the name(s) or the concentration of the active ingredient(s) nor to the name of the commercial product,

ii. to the names of other substances considered as hazardous to man and the environment,

iii. to the physico-chemical data of the active ingredient, the degradation products or metabolites of (eco)toxicological importance, and the commercial product,

iv. to the measures used to make the active ingredient or the commercial product harmless,

v. to the summary of the results of the trials intended to establish the efficacy of the product and its innocuousness for man, animals, plants and the environment,

vi. to the methods and precautions recommended to reduce risks during handling, storage, transport or other,

vii. to the methods of analysis of the active ingredient(s) and its residues after application, as well as the metabolites or other components considered important from an (eco)toxicological point of view,

viii. to the methods of destruction of the product and its packaging,

ix. to the decontamination measures to be taken in the case of accidental application or leakage,

x. to the first aid and medical treatment to conduct in the case of accidental exposure or poisoning.

1. THE REQUEST FOR REGISTRATION

It should include**:**

1.1 Administrative information

1 address of the applicant;

2 name and address of the owner of the brand;

3 name and address of the manufacturer of the formulated product and the place of manufacturing;

4 name and address of the manufacturer of the active(s) ingredient(s) and the place of manufacturing.

1.2 Identity of the formulated product

1.2.1 name of the formulated product;

1.2.2 composition of the formulated product: names and proportions

- **Active ingredient (s);**
- **additives;**
- **inert compounds;**

1.2.3 type of formulation (refer to appendix II);

1.2.4 WHO toxicological classification of the formulation.

1.3 Identity of the active(s) ingredient(s)

1.3.1 international common name (ISO);

1.3.2 purity;

1.3.3 identities and proportions of additives and impurities.

1.4 Suggested use

1 type of pesticide
(e.g. insecticide.....)

2 Suggested uses
(Impregnation of materials (mosquito nets, curtains, matels…) treatment of mosquitoes shelter (channels, ponds, water levels, etc.) ;

1.4.3 list of countries (with similar ecologies) where the formulated product is approved and the authorizations of usage in these countries;

2. THE SUMMARY

The object of the summary is to provide the Sahelian Committee for Pesticides with relevant information on the product to be registred . The provided data will enable the members of the SCP to have a snapshot on the product to be registred. The data will be used later to inform the users and for the production of a phytosanitary Index for the Sahel.

It is requested to the applicant to fill out the following form provided for this purpose. He should mention only essential information and if possible using key words or standard sentences.

Summary Form
Name and address of the applicant
Commercial name of the product

Identification of the product		
Trade Name		
Common names of the active ingredients		
Type of Formulation	Content of active ingredients	
Physicochemical properties		
Melting point	Boiling point	Volumic mass
Vapor pressure	pH	Inflammability
Solubility in water		
Solubility in organic solvents		
Physical state, odor and color		
Stability in storage		
Incompatibilities		
Other significant properties of the product according to the applicant		
Biological effectiveness		
Field of application of the product		
Pest(s) targeted		
Doses recommended		
Periods and Frequencies of application		
Waiting periods		
Toxicological information		
For the technical active ingredient		
Oral LD50	Dermal LD_{50}	LC_{50} per inhalation
Eye Irritation	Skin Irritation	Sensitizing
Cancerogenicity	Teratogenecity	Embryotoxicity
Neurotoxicity	Effect on reproduction	
WHO Classification		
For the formulated product	Dermal LD_{50}	LC_{50} per inhalation
Classification WHO	Irritation of the skin	Sensitizing

Eye irritation
Signs and symptoms of exposure
Symptoms of poisoning
First Aid measures in the case of poisoning
Therapy and antidotes
Safety measures
Precautions to be taken for transport
Precautions to be taken for storage
Precautions to be taken in the case of fire
Precautions to be taken for the destruction of the surpluses and packing
Recommendations for the decontamination of the material of application, clothing and protection equipments
Precautions to be taken before, during and after application of the product for a usage without hazard of the product
Effect of the product on the environment
Fate and behavior of the product in soil DT_{50}
Fate and behavior of the product in water DT_{50}
Toxicity of the product for birds Oral LD_{50}
Toxicity of the product for fish LC_{50}
Toxicity for soils organisms LC_{50}

Date of filling of the summary Form
Signature of the applicant

It should include:

3.1 For the formulated product:

3.1.1 Trade name

3.1.2 type of formulation

3.1.3 physical state, color and odor

3.1.4 chemical nature of the various components of the formulated product and their contents

The titles will be expressed in grams per kilogramme for the solid matters or in grams per liter at 20°C for the liquids:

- active ingredients;
- loads;
- thinners;
- solvents;
- émulgateurs;
- dyes;
- various additives.

3.1.5 minimal and maximum contents of active ingredients

3.1.6 real volumic mass for liquids or apparent for solids

Expressed in unit of mass per volume at 20°C (e.g. g/l)

3.1.7 volatility

3.1.8 flammability

- for liquids: give the flashpoint in centigrade degrees and indicate the method used;
- for solids: specify if the product is flammable and indicate the conditions of flammability**;**

NB. If the product is flammable, represent the sign of the flame on the label.

3.1.9 acidity/alkalinity/pH

- **acidity:** expressed in g/kg of H_2SO_4;
- **alkalinity:** expressed in g/kg of NaOH **;**

- **pH:** expressed for a 1% dilution for formulations to be diluted in water. Specify the limits compatible with a good stability of the product.

3.1.10 corrosiveness

Indicate the corrosive effects of the product towards materials usable for packing and towards the packing which this one is likely to come into contact when it is used**.**

3.1.11 storage stability

Indicate the guaranteed stability duration of the product in its commercial packing by specifying the conditions:

- provide the results for an accelerated stability test carried out 2 weeks at 54°C;
- provide also the results for long term stability tests carried out 12 weeks at 45°C, or 52 weeks at 37°C. Indicate the methods used

3.1.12 known incompatibilities of the formulated product

Indicate the incompatibilities with materials (e.g. mosquito nets, sheets, blanket, mattress…) with which it is likely to come into contact at the time of its storage, its handling or its application.

3.1.13 stability of the emulsion and its capacity of being put back in emulsion

To be determined for the emulsible concentrates. Indicate the method used.

3.1.14 behaviour in suspension

To be determined for the dispersible powders and for the concentrates in suspension. Indicate the method used.

3.1.15 water content

Indicate the maximum acceptable content and the method used**.**

3.1.16 Wettability

To be determined for the dispersible powders in water. Indicate the method used.

3.1.17 fineness of the particles (particle size range)

To be determined for the pellets, the powders for powdering, the dispersible powders and the concentrates in suspension. Indicate the methods used.

3.1.18 fluence

To be determined for the powders for powdering. Indicate the method used.

3.1.19 kinematic viscosity

To be expressed in centistockes (or mm^2 / s) at 25, 30 and 40°C, for the formulations intended for U LV pulverization. Indicate the method used.

3.1.20 miscibility with hydrocarbons

In particular with gas oil and "Solvesso" 200 (or an aromatic solvent of similar characteristics). To be determined for liquids intended for ULV pulverization. Indicate the method used.

3.2 For the active ingredients of technical quality:

3.2.1 physical state, color, odor

3.2.2 real volumic mass (to be determined for liquids) or apparent (to be determined for solids)

It is expressed in unit of mass per volume at 20°C (e.g. g/l).

3.2.3 possible variations of the composition: minimal and maximum purity

3.2.4 melting point

3.2.5 boiling point

3.2.6 decomposition point

3.3 For the pure active ingredients:

3.3.1 international common name

Proposed or accepted by the ISO and the synonyms

3.3.2 chemical denomination

According to international nomenclature IUCPA

3.3.3 empirical chemical formula

3.3.4 structural chemical formula

3.3.5 molar mass

3.3.6 physical state, color, odor

3.3.7 real volumic mass (to be determined for liquids) or apparent (to be determined for solids)

It is expressed in unit of mass per volume at 20°C (e.g. g/l).

3.3.8 melting point

3.3.9 boiling point

3.3.10 decomposition point

3.3.11 vapor pressure

It is expressed in millibars.

3.3.12 index of sulphonation and distillation characteristic

To be determined for mineral oils.

3.3.13 solubility in water and organic solvents

With a specified temperature, preferably in the interval 20 - 25°C.

3.3.14 partition coefficient

Between water and a suitable nonmiscible solvent.

3.3.15 absorption spectra:

- ultraviolet;
- visible;
- infra-red;
- nuclear magnetic resonance (NMR);
- mass spectrum (ms).

3.3.16 chemical stability:

- rate of hydrolysis and photolysis under specified relevant conditions;
- half-life according to the pH in aqueous solution at 20°C or in an isopropanol/water mixture in the ratio 1:1

In the case the formulation contains several active ingredients, all this information should be provided separately for each active ingredient.

4. BIOLOGICAL EFFECTIVENESS DOSSIER

The tests of biological effectiveness are carried out with the formulated product. They have the object to provide sufficient data to allow an evaluation of the level, duration and uniformity of control or protection or expected effects of the formulated product by comparison with suitable reference products if there is any.

For these tests, it is required to specify the objectives, the materials and methods used, the results obtained as well as the references of the institutions having carried out the tests.

The results coming from these tests must be sufficient to allow an evaluation of the biological effectiveness of the formulated product.

The biological effectiveness dossier should include:

4.1 Reports of the effectiveness tests

4.1.1 Tests requirements

In principle, a test must relate to three objects:

- the product tested;
- the reference product;
- an untreated blank.

It should demonstrate the degree of effectiveness of the formulated product on the harmful pests for which the registration application is presented.

The formulated product must be tested under conditions where it is shown that the harmful pest is present at a extent causing harmful effects on public health.

For any formulated product presented for registration, the applicant should present the results of tests conducted in one or more CILSS. countries .

The number and type of tests are distributed as follows:

- first experimentation: one (1) test in controlled medium with repetitions;
- second experimentation: one (1) test in controlled medium and one (1) test under the public conditions of use;

The SCP can decide to grant an APV based on the reliable results obtained during the first two experiments

For the registration, the applicant should present:
data on the distribution of the product in the CILSS countries
the results of toxicovigilance trial conducted over at least four (4) years, in one or more CILSS countries.

4.1.2 Contents of the reports/ratios

The reports of studies on the biological effectiveness of formulated products subjected to the registration must be presented in accordance with the Protocols of the CSP. If those are not available for a given combination (pesticide/harmful pests), the reports should be conform to international Directives (WHOPES, eg.) on the effectiveness data necessary for the registration of pesticides.

4.2 A summary recalling:

4.2.1 The mechanism of action of the active(s) ingredient (s)

e.g. Biochemical, physiological

A description of the mode of action

E.g. repulsion, ingestion, inhalation, contact, systemic

4.2.3 Methods of use

4.2.3a a description of the field of application of the formulated product

4.2.3b a specification of each field of application

4.2.3c a description of the target pest
E.g. insects, specification of the family, the group, the genus, species.

4.2.3d a precision on the dose of use, periods, stages and frequencies of application
Include the procedures recommended for the application of the product

4.2.4 limits of use

4.2.4a An indication of the limits of use in order to ensure harmlessness for:

- the animal;
- the treated substrate;
- the applicators; users of treated materials (children and pregnant women sleeping under treated materials)

4.2.4b An indication of the withdrawal periods to be respected between the last application of the product and the entry in the treated zone or between the last application and the use of treated materials

4.2.5 incompatibilities of the product with other pesticides

4.2.6 information on the appearance or the possible development of a resistance

Nota Bene
The Provisional Authorization of Sale or the registration is delivered for:
- the fields of application and the harmful pests for which the results of the biological effectiveness tests are satisfactory;
- cases where the sanitary and environmental risks are very weak

5. ANALYTICAL DOSSIER

It should include:

5.1 Formulated product

Methods of extraction, identification dosage of the active(s) ingredient (s) included in the commercial product.

5.2 Residues

5.2.1 Methods of extraction and dosage of the residues and of its (their) metabolites belonging to the definition of residues.

5.2.2 Methods of study of the residues in the treated substrate or likely to be contaminated

It must include:

1 toxicity studies with the active(s) ingredients;

2 toxicity studies with the formulated product;

3 a synthesis on the toxicity observations with the formulated product for hu man;

4 recommendations concerning the therapy and the precautions.

For these studies, it is required to specify the objectives, the materials and methods used, the results obtained as well as the references.

6.1 Toxicity studies of the technical quality of active ingredient (s)

The summaries of the studies will have to be supported by references and reports of experimentation explicitly mentioning the methods employed and vehicle thanks which the poison was administered. The studies will have to be undertaken separately for each active ingredient entering the composition of the product.

6.1.1 Acute toxicity

The study will include the following points:

6.1.1a LD_{50} per oral route

To two animals species, of which a rodent, males and females, after administration of a single dose.

6.1.1b LD_{50} per dermale route

To the rabbit or the rat, after application of a single dose;

6.1.ç LC_{50} per inhalation

It must be carried out when active substance:

- is a gas, in particular liquified;
- must be used as fumigant;
- must be built-in in a smoke-producing preparation;
- is an aerosol;
- has a vapor pressure > $1x10^{-2}$ Pa and must be built-in in preparations with use in the closed spaces such as stores or greenhouses;

- must be built-in in powdery preparations containing a significant proportion of particles of a diameter < 50 M (> 1% on the weight basis);
- must be built-in in preparations to apply according to a process producing a significant proportion of particles or droplets of a diameter < 50 M (> 1% on the weight basis).

_ 6.1.2 Skin irritation

It will be carried out on rabbit, according to the recognized standards methods

6.1.3 Eye irritation

It will be carried out on rabbit, according to the recognized standard methods.

6.1.4 Sensitization

The study must be carried out in any circumstance except if the substance is one sensitizing known. It will be carried out according to the recognized standard methods and the results must indicate clearly if the active ingredient is allergenic or not.

6.1.5 Oral toxicity by reiterated administration

In all the cases, one will specify the animal species used. The duration of the study (28 or 90 days) must make it possible to determine the nature of the side effects, their reversibility or not and to establish the dose without observable effect (NOEL).

6.1.6 Toxicity by reiterated administration by other routes

Additional studies of toxicity by cutaneous route or inhalation can be required for the evaluation of the exposure of the operator.

6.1.7 Genotoxicity

The study of genotoxicity will have to at least provide the results of two experiments to each stage. One recommends in vitro studies, studies in vivo on somatic cells and the studies in vivo on germinal cells. The other tests to be realized must be a function of the interpretation of the results to each stage.

6.1.7a In vitro studies

Tests of mutagenesis in vitro must always be carried out (bacterial test relating to the genetic mutation, test of clastogenecity in the cells of mammals and genetic mutation test in the cells of mammals).

One will be able to use the following tests:

- test of Ames on strain of Salmonella typhimurium and/or Escherichia coli, with and without activation by microsomal enzymes of hepatic cells;
- test of specific mutation on Escherichia coli and/or Saccharomyces cerevisiae, with and without activation by microsomal enzymes of hepatic cells;
- test of specific mutation on lymphomatic cells of mouse or Chinese hamster, with and without activation by microsomal enzymes of hepatic cells;
- test on human fibroblasts;

- test on hépatocytes of rats to detect a possible not programmed synthesis of DNA;
- test on cultures of Saccharomyces cerevisiae on mitotic crossing over and genetic conversion;
- test "pol.-A1" relating to the deterioration of the DNA at mutants of Escherichia coli, with and without activation by microsomal enzymes of the liver;
- test "Rec-Assay": relating to strain of Bacillus subtilis to trace a possible harmful effect on the DNA.

6.1.7b Studies in vivo (somatic cells)

One will be able to use the following tests:

- metaphase analyzes of the cells of the osseous marrow of the rodents;
- tests of micronucleus in the rodents;
- test of no programmed synthesis of the DNA;
- spot test in the mouse.

6.1.7c Study in vivo (germinal cells)

One will be able to use the following tests:

- test of dominant lethality in the mouse;
- test on hamster (cytogenetic study of the spermatogonies);
- test on the Chinese hamster (study relating to the exchange of chromatides sisters and the chromosomal abnormalities ;
- test of lethal recessive mutation on Drosophila melanogaster;

6.1.8 Long-term toxicity/Carcinogenesis

Long-term toxicity and the cancerogenicity of any active ingredient must be determined. If, in certain exceptional situations, it is declared that such tests are not necessary, these declarations must be fully justified.

The studies carried out in the long run and reported taken into account with other data and significant information concerning the active ingredient, must be sufficient to trace the effects resulting from repeated exposure to the active ingredient and to be sufficient in particular to identify the harmful effects resulting from the exposure to the active ingredient, to identify the target organs, to establish the relation dose-effect, to identify the changes in the signs and demonstrations of toxicity observed and to set the dose without observable effect.

In the same way, the studies of carcinogenesis considered with other data and relevant information must be sufficient to make it possible to evaluate the dangers for the man having undergone repeated exposures to the active ingredient and in particular must be sufficient to identify the cancerogenic effects resulting from the exposure to the active substance, to determine the species and the specificity of the induced tumours, to establish the relation dose-effect and for cancerogenic the nongénotoxics ones, to identify the maximum dose without harmful effect.

6.1.9 Teratogenicity and embryotoxicity

The experiments will be undertaken on two species of animals, of which the rabbit, administration of the product being made by oral route for one well defined period of organogenesis.

6.1.10 Effects on the reproduction

The studies will be undertaken on two generations at least, with a coupling, preferably on the rat. The observation will be carried in particular to the fertility (males and females), the effects pre and postnatal on the young and the increase in the sensitivity to the product during generations. The distribution of the administered doses will be such as at least a dose will be likely to have an effect according to the results of the other tests of toxicity.

6.1.11 Delayed Neurotoxicity

The studies must provide sufficient data to examine whether the active ingedient can cause a differed neurotoxicity after acute exposure. These studies must be carried out for the active ingredient of similar structure or related to induce a delayed neurotoxicity (e.g. organophosphorus).

6.1.12 Studies of toxico-kinetic

The studies will be carried on the rat (single doses for two concentrations and repeated studies with only one concentrattion) on the absorption, the distribution and the accumulation in the body, the biotransformation, the elimination, eg. of the tested active ingredient and its metabolites.

6.1.13 Other studies

Other studies could be asked if the results of the toxicity test , or if the chemical structure and the properties of the active ingredient, justify them:

- studies on the potential immunotoxicological;
- studies on the toxicity of the active(s) ingredients on other species of animals than those previously quoted;
- studies on the abnomalities of the eye (cataract) carried out on ducklings
- studies on the inhibition of the cholinestérase (plasma, érythrocytes, brain);
- studies on the toxicity of isomers, solvents, loads, additives, impurities and others by products contained in the formulation;

6.2 The toxicity study of the formulated product

The required toxicity studies must make possible to indicate the toxicity class of the formulated product according to WHO classification.

The summaries of the studies will have to be supported by references and reports of experimentation explicitly mentioning the methods used and the means thanks which the poison was administrated

6.2.1 Acute toxicity

The study will include the following elements:

6.2.1a LD_{50} per oral route

In the rat or the male mouse and females after administration of a single dose

6.2.1b LD $_{50}$ per dermale route

In rabbit or the rat, after application of a single dose

6.2.ç LC $_{50}$ per inhalation

For certain formulations, after a single exposure of the animal according to the recognized standards methodologies'. The preferable animal species wich is able to be used for this test is the rat. One will be able to carry out this test on any other species expected at the level of recognized standard methodologies. The formulations for which LC $_{50}$ is required are as follows:

- a gas, in particular liquified;
- a smoke-producing preparation or fumigant;
- an aerosol;
- a powder containing a significant proportion of particles of a diameter < 50 M (> 1% on the weight base);
- a formulation applied by aircraft if the exposure by inhalation is relevant;
- a formulation supposed to contain a substance activates whose vapor pressure is < 1x10 $^{-2}$ Pa and must be used in the spaces closed such as the stores or the greenhouses;
- a formulation supposed to be applied according to a process producing a significant proportion of particles or droplets of a diameter < 50 M (> 1% on the weight base).

6.2.2 skin Irritation

The study will be carried out in rabbit, according to the recognized standard methods. This test will not be necessary if it is established that the product is corrosive.

6.2.3 Eye irritation

The study will be carried out in rabbit, according to the recognized standard methods. This test will not be necessary if the product causes a strong irritation on the skin.

6.2.4 Sensitizing

The study will be carried out according to the recognized standard methods and the results must indicate clearly if the product is allergenic or not.

6.2.5 Data relating to the exposure

They are data aiming at the protection of workers against the risks related to the exposure to the products.

6.2.ä Estimate and measurement of the operator exposure

An estimate of the operator’s exposure under the conditions of use suggested must be made thanks to the use of a model of suitable calculation. The estimate must be made on the assumption that the operator does not use any individual protection equipment and a second estimate on the assumption that the operator uses a protection equipement effective and available on the market.

The effective data of exposure concerning the principal route of exposure must be reported if the evaluation of the risk indicating that a limiting value relating to health is exceeded.

6.2.5.b Estimate and measurement of the exposure of the people present

The people present can be exposed during the application of the products. An estimate of the exposure of the people present must be made for each method of application. The estimate must be made on the assumption that the people present do not carry any individual protection equipment. Measurements of exposure of the people present can be required when the estimates give a report on an worring situation.

6.2.5c Estimate and measurement of the exposure of the workers

The workers can be exposed following the application of the products, while penetrating into the treated buildings. Sufficient data must be reported to provide a base of selection of the adapted provisions of protection, including the periods of waiting and exclusion of the places.

In the cas , the cutaneous exposure is the main route of exposure, a test of absorption by the skin can be, if it is not already available, a useful test of replacement to refine the estimate.

6.2.5d Estimate and measurement of the exposure of the users of treated materials (case of impregnated mosquito nets, curtains…)

The user of treated material can be exposed during the use of these materials. Suffisantes data must be provided to give a base of selection of the provisions of adapted protection, including the periods of waiting before use. An estimate of the sensitive people (children, pregnant women, old people, people suffering of respiratory difficulties…) must be provided.

If the cutaneous and/or respiratory exposure is (are) its (their) main route (s) of exposure (s), a test of absorption by the skin and/or inhalation can, if it is not already available, a useful test of replacement to refine the estimate.

6.2.5 e Skin absorption

It must be carried out when the cutaneous exposure is a route of significant exposure and that the evaluation of the risk indicates that a limiting value concerning health is exceeded**.**

6.2.5 F Toxicological data available related to nonactive substances

One will adopt the procedures of a specific information system related to the nonactive substances which could be dangerous. The applicant will provide the maximum information available on this subject.

6.3 Synthesis of the observations on the toxicity of the product formulated for man

The studies will make case, if they are available, of the synthesis of the observations carried out on the product toxicity on the human being, taking into account in particular the health files of workers handling this product, from direct clinical observation of deliberated cases of poisoning or accidental and from the announced cases of over-sensitiveness. If the data are available, the nature of the metabolites in man will be specified. One will estimate if possible from all these data the dangerous dose for man.

One will indicate:

- signs and symptoms of poisoning in the event of intoxications in man;
- emergency measures and counter-indications in the event of accident and or discomfort;
- the emergency therapy and antidote and treatment;
- safety measures for storage and transport;
- procedures for decontamination**.**

- ## 6.4 Recommendations regarding the therapy and the precautions

The recommendations will have to include the following elements:

6.4.1 diagnosis and symptoms of poisoning

6.4.2 measurements of first emergency in the event of poisoning and counter-indications

6.4.3 therapy and antidotes

One will describe the treatments to be applied by the doctor, and one will indicate if it is necessary, the antidotes and their mode of administration as well as the counter-indications;

6.4.4 safety measures

6.4.â Precautions to be taken for transport;

6.4.4b Precautions to be taken for storage;

6.4.4c Precautions to be taken in the event of fire;

6.4.4d Precautions to be taken for the handling of packing;

6.4.ê Precautions to be taken in case of leak or of accidental spill

6.4.4f Recommendations for the decontamination of the material of application, clothing and protection equipements;

6.4.4g Instructions and/or proposals to be reproduced on packing

Nature of the risks.	Precautions to be taken before, during and after the application for a safe use of the pesticide

It must include

1 studies on the behavior and the fate of pesticide in the environment

2 studies of the effects of the pesticide on the not-targets organism.

These studies being very bulky, the applicant will provide only sufficient detailed summaries (the goal of the study, materials and methods used, the results obtained and the references of the study) in order to allow their easy understanding . The full reports of some studies could be , however, required by the CSP.

The studies must be carried out according to the internationally recognized protocols or directives, such as for example those of OECD, WHOPES , of the European Union or the SETAC. For each study, reference must be made (in the dossier) to the protocol and/or the directive applied.

The studies required in this chapter includes the minimum requirements for the APV(Temporary sell authorization) and the registration. However, the applicant can provide information and/or additional results of the studies describing the environmental effects of the product submited to the registration

7.1 Behavior and fate of pesticide in the environment

7.1.1 The fate and behavior in the soil (does not apply to insecticides intended for the materials of mpregnation (mosquito nets, curtains…))

7.1.1a Path of degradation in the soil

laboratory studies

The laboratory tests must be carried out in order to identify the processes used (chemical and biological degradation), the relevant compounds of the product present in the soil (active ingredient, metabolites, product of reaction , eg.) as well as the extractable residues or not. The tests must be carried out on at least a type of representative soil for the Sahel. The results obtained must be presented in the form of diagrams.

The aerobic path of degradation must be always described except if the possibility of a contamination of the soil is excluded (e.g. the treatment of closed spaces, treatment of the stored products, the internal domestical use and the veterinary products).

The description of the anaerobic path of degradation is required only in the case of anaerobic conditions (e.g. surface water treatment, zones of irrigation or drainage, etc).

The path of photodegradation must be always described except if the possibility of deposit on the soil surface is excluded (e.g. the treatment of closed spaces, treatments of the stored food products, the internal domestic use
and the veterinary products).

The tests are carried out with the active ingredient of technical quality. However, the studies must also be carried out with the exact formulation to be registred if the extrapolation of the results from the active matter is not possible (e.g. for the formulations with slow release).

7.1.1b Speed of degradation in the soil
laboratory Studies

The speed of aerobic degradation in the soil must be estimated in 3 representative soil for the Sahel (fine sand, muddy sand [2 to 5% organic matter], clay soils). The studies lead to the determination of the DT_{50} and the DT_{90} for each type of soil**.**

The speed of aerobic degradation must be always estimated except if the possibility of a contamination of the soil is excluded (e.g. the treatment of closed spaces, the treatment of the stored food products, the internal domestic use and the veterinary products).

The description of the anaerobic path of degradation is required only in the event of anaerobic conditions (e.g. surface water treatment, the zones of irrigation or drainage). The tests is carried out on the same soil used for the study of the path of degradation (see 7.1.1a).

The tests are carried out with the active ingredient of technical quality. However, the studies must also be made with the exact formulation to registrate if the extrapolation of the results starting from the active ingredient is not possible (e.g. for the formulations with slow release).

The standards studies are carried out at 20°C and they are acceptable. However, since the speed of degradation can be faster in the Sahel because of the high temperature, additional studies at 25-30°C are encouraged for a better evaluation of the incidence of the temperature on the degradation of the pesticide**.**

7.1.ç Adsorption/desorption in the soil

Laboratory studies

The provided data should be sufficient to determine the coefficient of adsorption of the active ingredient, the metabolites, the reaction and the breakdown products, having a toxicological and environmental incidence or representing more than 10% of the original active ingredient . The importance of the bound residues must be evaluated.

The study is made in at least three types of soil representative for the Sahel.

The capacity of adsorption and desorption must be always estimated, except if the possibility of a contamination of the soil is excluded (e.g. the treatment of closed spaces, the treatment of the stored food products, the internal domestic use and the veterinary products).

The study is made with the active ingredient of technical quality.

Mobility in the soil

Laboratory Studies
The provided data should be sufficient to evaluate the mobility and the potential of leaching of the active ingredient and, if possible, of the metabolites and breakdown products and reaction having a toxicological and environmental incidence or representing more than 10% of the original active ingredient.

The study is made in at least three types of soils representative for the Sahel.

Mobility in the soil must always be estimated, except if it is possible to estimate it from the data of adsorption/désorption, or except if the possibility of a contamination of the ground is excluded (e.g. the treatment of closed spaces, the treatment of the stored food products, the internal domestic use and the veterinary products).

The tests are carried out with the active ingredient technical quality. However, the studies must also be made with the exact formulation to approve if the extrapolation of the results starting from the active ingredient is not possible (e.g. for the formulations with slow release).

7.1.1e Estimate concentrations in the soil

An estimate concentrations in the soil must be provided. It must correspond to a single application of the product, with the dose of the highest application for which a registration is required. Moreover, an estimate of these concentrations is made for the maximum number of applications to the highest dose .

The estimates are made for each type of soil tested. In addition to the concentration of the active ingredient , the estimates include the concentrations of the metabolites the breakdown products and reaction having a toxicological and environmental incidence.

7.1.2 Fate and behavior in water **(does not apply to insecticides intended for the impregnation of materials (mosquito nets, curtains…))**

7.1.à Paths of degradation in the aquatic environment

Laboratory Studies

Laboratory tests must be carried out in order to identify the relevant compounds of the product present in water, in the bottom sediments and in the suspended matter (active ingredient, metabolites, reaction product, etc), as well as the processes brought into action (hydrolysis, photochemical and biological degradation). The results obtained must be presented in the form of diagrams.

The path of degradation in the aquatic environment must always be described except if the possibility of a contamination of water is excluded (e.g. the treatment of closed spaces, the treatment of the stored food products, the internal domestic use and the veterinary products).

The tests are carried out with the active ingredient of technical quality

7.1.2b Speed of degradation in the aquatic environment

Laboratory studies

Laboratory studies must be carried out in order to be able to estimate the speed of degradation of the active ingredient. The tests on the speed of hydrolysis, the speed of photochemical degradation and that of biological degradation must be carried out.

The speed of degradation in the aquatic environment must always be described, except if the possibility of a contamination of water is excluded (e.g. the treatment of closed spaces, the treatment of the stored food products, the internal domestic use and the veterinary products).

The tests are carried out with the active ingredient of technical quality.

Field studies

Studies on the field can be required if it is not possible to extrapolate the results obtained from the above laboratories studies. They will be carried out with the formulated product, in the Sahel or under similar environmental conditions.

7.1.2c Estimate concentration in water

The estimate concentrations in surface water and underground water must be provided. They must correspond to the dose of the highest application and the maximum number of applications for which a registration is required.

Moreover the concentration of the active ingredient , the estimates include the concentrations of the metabolites , the breakdown products an the reaction having a toxicological and environmental incidence**.**

7.1.4 Definition of the residue

It is necessary to propose a definition of résidus in the soil, water , taking into account their levels and toxicological and environmental incidences. The definition of the residue will be useful for the environmental follow-up and toxico-vigilance.

7.2 Effects of the pesticide on not-target organisms (does not apply to insecticidal intended for impregnation of materials (mosquito nets, curtains…))

7.2.1 Toxicity towards the birds

7.2.1a oral, acute Toxicity

Of active ingredient technical quality

The acute DL $_{50}$, of the active ingredient of technical quality, by oral route will be given for two species of birds at least. The suitable species includes the pigeon, the Japanese quail, the duck, the Bengalius finch. Like sahelian species bec d'argent (Lonchura malabarica) is acceptable. The studied species will be selected by taking into account their feed behavior and the risks of exposure.

The studies are necessary for all the fields of application, except for example for. Aerosols bombs, the spirals coil and those used for the treatment of closed spaces and the stored food products.

Of formulation

A study of acute oral toxicity with the formulated product is only required if TERa [1] or TERst [2] of the active ingredient is between 10 and 100. Moreover, a study with the formulated product is required if it is composed of several active **matters and the** results of the studies on the mammals show that the formulated product toxicity is higher than expected on the basis of additivity of toxicities of the active ingredients separatly

The study is made with the most significant species given in the studies with the active ingredient.

Of formulation

[1] **TERa** (ratio toxicity aiguë/exposition) = DL $_{50}$ (Mg m.a./kg body weight)/ETE (estimated theoretical exposure) (Mg m.a./kg body weight).

[2] **TERst** (food toxicity ratio sub-aiguë/exposition) = CL $_{50}$ (Mg m.a./kg food)/ETE (estimated theoretical exposure) (Mg m.a./kg food).

A study with the formulated product is also required if the formulation is made up of several active ingredients and the results of the studies of acute toxicity (7.2.1a) show that the toxicity of the formulated product is higher than expected on the basis of additivity of toxicities of the active ingredient separately.

7.2.1 B sub-chronicle toxicity and/or reproductive

Data on sub-chronicle toxicity or reproductive could be necessary:
if there are risk of prolonged exposure because of the methods and the frequencies of application of the formulation;

- if there are indications that the substance accumulates;
- if harmful effects can be considered in the light of experiments undertaken with similar products or results of the tests of acute and subacute toxicity of the active ingrdient;
- if one cannot make predictions on the long-term effects of the active ingredient, because of a lack of knowledge on the relations between its chemical structure and its toxicity.

The sub-chronicles studies and/or reproductives are made with the active ingredient of technical quality.

7.2.1 C Studies in cage or in the field

The study must make it possible to evaluate the nature and the extent of the risk under the practical conditions of use of the product in the Sahel.

When TERa and TERst > 100 and when the sub-chronicles studies and/or on the reproduction with the active ingredient did not raise the existence of risks, it is not necessary to make studies in cage or in the field.

For any other case, a specialized opinion is necessary to decide if it is necessary to carry out studies in cage or in the field in the Sahel.

of Like indication, these studies will be normally required by the CSP:

- if TERa and TERst < 10 or if TERlt [3] < 5 (except if the final evaluation is possible on the basis of study on the appetence);

- for the products intended for the air or terrestrial treatments of great scale (e.g. anti- locust fights, fight antivector), except if it can be deduced from the studies above that the risk for the birds is negligible.

[3] **TERlt** (food toxicity /ratio length-terme/exposition) = CSEO (Mg m.a./kg food)/ETE (estimated theoretical exposure) (Mg m.a./kg food).

The studies in cage or in the field are made with the formulated product.

The results of the studies in other ecological and/or similar climatic areas can replace, in certain cases, the requirement a study in the Sahel**.**

7.2.2 Sub-chronicle toxicity and/or reproductive

Data on sub-chronicle or reproductive toxicity could be necessary:

- if there is a risk of prolonged exposure because of the methods and frequencies of application of the formulation;
- if there are data indicating that the substance accumulates;
- if harmful effects can be considered in the light of experiments undertaken with similar products or results of the tests of acute and subacute toxicity of the active ingredient;

7.2. 3 Toxicity towards fish (does not apply to insecticides intended for impregnation of the materials (mosquito nets, curtains…))

7.2. 3 A Acute toxicity

Of active ingredient

The LC_{50} after 96 hours will be given for at least two suitable fish species. One will use the species recommended by the standards methodologies, including at least one tropical (e.g. silurid, carp). The sahélian species *Oreochromis niloticus* ("tilapia") can also be used.

The studies are obligatory for the following fields of use of pesticides: Soil treatment, treatment in open field (terrestrial or air), external domestic use, water treatment, rodenticides. They can be required for any other field of application if the exposure of water with the product is possible.

The study is carried out with the active ingredient of technical quality.

Of formulation

Laboratory studies on fish with the formulation to be registrated are required if the risk of pesticide cannot be predicted from the studies with the active ingredient. This can be the case of the formulations with several active ingredients, or for formulations containing the substances

being able to increase the toxicity of the active ingredient (e.g. certain solvents, dispersing etc.)

The studies with the formulation are always required for the products intended to be applied directly to water. These studies can also be required if there is a great risk of contamination of surface water.

If one of the three groups of organisms evaluated into 7.2.4 to 7.2.6 is much more sensitive than the others to the active ingredient (a factor of 100, or more), the studies with the formulation must be carried out only with the most sensitive species. If necessary, the studies are made with at least a species of each of the three groups of aquatic organism (fish, invertebrate, algae).

7.2. 3 B Chronical toxicity

The study is made in order to determine the EC_{50} and the CSEO for at least a suitable fish species.

A chronical study with a suitable fish species is required:

- for any product applied directly to water, or very close to surface water, (e.g. acquatic weedkillers, rice treatment while a water blade is present, some antivector treatments {e.g. mosquitos, Simulidae}, anti-aviaire treatment) (anti bird treatement), if DT50 > 2 days;
- if there are indices of accumulation of the active ingredient;
- If the results of the studies of short-term toxicity make such a study necessary.

The study is carried out with the active ingredient of technical quality.

7.2. 3 C Bio-accumulation

When it is suspected that a product is bioaccumulable ($Log\ P_{ow} > 3$), a study of bio-accumulation in fish is required if the formulated product is intended for the following field of application: Soil treatment , treatment in open field (terrestrial or air), water treatment, rodenticides. They can be required for the other fields application if the exposure of water with the product is possible.

With regard the results of this study, complementary tests on the bio-accumulation can be necessary**.**

The study is carried out with the active matter of technical quality.

7.2. 4 Toxicity towards the aquatic invertebrates (does not apply to insecticides intended for the impregnation of materials (mosquito nets, curtains…))

7.2. 4a Acute toxicity

Active ingredient

The determination of the acute EC_{50} for at least a suitable species of organism is required. The study can be carried out with the standard species *Daphnia magna*, or with one of the sahelian species *Caridina africana* (crustacean), Streptocephalus sudanicus (crustacean) or *Anisops sardeus* (watery insect).

The studies are obligatory for the following fields of use of pesticides: soil treatment, treatment in open field (terrestrial or air), external domestic use, water treatment, rodenticides. They can be required for any other field of application if the exposure of water with the product is possible.

In the case of direct exposure of water with the pesticide, a study on at least a species of each of the three groups of following invertebrates are required: aquatic crustacean aquatic insects , aquatic molluscs.

The studies are carried out with the active ingredient of technical quality.

Of formulation

Laboratory studies with the formulation to be registred on the aquatic invertebrates are required if the risk of the pesticides cannot be predicted from the studies with the active ingredient. This can be the case for the formulations with several active ingredients, or for formulations containing the substances being able to increase the toxicity of the matter ingredient (e.g. some solvents, dispersing etc.)

The studies with the formulation are always required for the products intended to be applied directly to water. In this case, a study on at least a species of each of the three groups of following invertebrates are required: aquatic crustacean aquatic insects, aquatic molluscs.These studies can also be required if there is a great risk of contamination of surface water.

If one of the three groups of organism evaluated into 7.2.4 to 7.2.6 is much more sensitive than the others to the active ingredient (a factor of 100, or more), the studies with the formulation must be carried out only with the most sensitive species. If necessary, the studies are made with at least a species of each of the three groups of aquatic organism (fish, invertebrate, algae).

7.2. 4 b Chronical Toxicity

Determination of the EC_{50} and CSEO for at least a suitable species of aquatic invertebrate, preferably *Daphnia magna.*

(After development of the standard protocols for the chronic tests, the study can also be carried out with a sahélian species like *Caridina africana* or *Streptocephalus sudanicus.)*

A chronical study with a suitable species of aquatic invertebrate is required for all product applied directly to water, or very close to water surface , (e.g. aquatic weedkillers, treatment of rice while a water blade is present, some antivector treatments {e.g. mosquitos, Simulidae}, anti-aviaire treatment), if the $DT_{50} > 2$ days;
if the results of the studies of short-term toxicity make such a study necessary.

The study is carried out with the active ingredient of technical quality.

7.2. 5 Toxicity towards the aquatic algae (does not apply to insecticides intended for the impregnation of materials (mosquito nets, curtains…))

7.2. 5 Effects on the growth

Active ingredient
The determination of the EC_{50} and the CSEO for the growth of the algae are required. In general the study is made with a green alga (for example *Scenedesmus subspicatus* or *Selenastrum capricornutum*).

The studies are obligatory for the following fields of pesticides use: soil treatment, treatment in open field (terrestrial or air), external domestic treatments water treatment, rodenticides. They can be required for any other field of application if the exposure of water with the product is possible.

The study is carried out with the active ingredient of technical quality.

Formulation
Laboratory studies with the formulation to be registred on the algae are required if the risk of the pesticides cannot be predicted from the studies with the active ingredient. This can be the case of the formulations with several active ingredients, or for formulations containing the substances being able to increase the toxicity of the active ingredient (e.g. some solvents, dispersing etc.)

The studies with the formulation are always required for the products intended to be applied directly to water. These studies can also be required if there is a great risk of contamination of surface water.

If one of the three groups of organims evaluated into 7.2.4 to 7.2.6 is much more sensitive than the others to the active ingredient (a factor of 100, or more), the studies with the formulation must be carried out only with the most sensitive **species. If** necessary, the studies are made with at least a species of each of the three groups of aquatic organism (fish, invertebrate, algae).

The study is generally carried out with the formulated product, but the study done with the active ingredient of technical quality can also be accepted. In the case of formulation containing more than one active ingredient, the study must always be conducted with the formulated product.

The studies are made with the active ingredient of technical quality or with the formulation. They are required with the formulation when it is impossible to extrapolate the results obtained with the active ingredient (e.g. For the formulations with slow release and those containing more than one active ingredient).

It must include

Data on the residues of the formulated product and its metabolites on:

soil

walls

water

blood

materials impregnated (mosquito nets, curtains…)

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9. THE DOSSIER PACKING AND LABEL

It must include

9.1 Packing

Packing must preserve all its qualities during the storage period of the pesticide.

The material selected must be adapted perfectly to the physicochemical properties of the contents according to the local conditions of storage, in particular to avoid any corrosion.

If the contents were to be used with very low dose for the liquid products in particular, the existence of measuring cap is an additional guarantee of good dosage and security usage .

The unit volume of packing must, if possible, be adapted to the unit of area to treat, so that the totality of the contents is used only once.

The on-packing, in particular made of paperboards, must be the most solid possible to facilitate the transport and the storage. The indications related to the transport are mentioned on the on packing and on the large packing in accordance with the international symbols adopted for the domaine of air, maritime, railway and terrestrial.

The applicant must specify:

- **the nature of materials constitutive of packing;**

- The dimensions of packing: in particular the diameter of the openings and the closure;
- The recommendations for the elimination of the out-of-date products and packing;

9.2 Model of label

The label is designed like a means to reach a high level of communication between the supplier and the purchaser and or the user. Fundamental information must include, in clear terms and concise, the use of the product in full safety and with the guarantee of effectiveness throughout its existence.

Any request for registration must go with a model of original label (or model). Information must be mentioned by the manufacturer by using indelible characters, clearly visible and easy to read.

The model of label must be conform to the FAO Directives for the good labelling of pesticides.

The label must include the following data:

9.2.1 a description of the contents:

9.2.1a Trade name of the pesticide

9.2.1b name and content of active ingredients

9.2.ç type of pesticide (insecticide.....)

9.2.1d type of formulation

9.2.1e net capacity expressed in international measuring units

9.2.2 a very visible indication of the risk
By a coloured band in the bottom of the label and a symbol of toxicity in accordance with the WHO classification of the pesticides.

9.2.3 concises indications for the precautions to be taken
For the handling and the judicious use of the pesticide.

9.2.4 concise indications on first aid in the case of intoxication

9.2.5 indications on correct use of the contents:

9.2.ä how, when and where to use the product
To specify the pest and the stages of treatment

9.2.5b counter-indications of use

9.2.5c precise details on the withdrawal periods. before use

9.2.6 the name and the address of the Manufacturer ("Pesticide manufactured by.....")

9.2.7 the place of manufacture of the product (country)

9.2.8 the name and the address of the national or regional distributor if there are some ("Pesticide distributed by.....")

9.2.9 the number of registration ("N° of registration: ..... ")

9.2.10 the date of manufacture or formulation ("Manufactured it.....")

9.2.11 the number of the batch

9.2.12 the expiration date ("to use before.....")

9.2.13 stability conditions

9.2.14 conditions of warnings

9.2.15 an indication of the legal responsibilities

The manufacturer must use labels which carry as much as possible the symbols and the pictograms approved on the international level, in addition to the instructions and the written warnings.

It is essential that the label is perfectly adherent to the packing, if possible waterproof

and perfectly remain readable at any time of the use.

The label must be marked: "To read carefully the label before use ".

9.3 Labels for small packing

For small packing which dimensions are lower or equal to 100 ml for the liquids and lower or equal to 100 G for the solids), the applicant must provide a note. This note must include the entire requierements of the model of label.

The label on this packing will carry the following data**:**

9.3.1 a description of the contents:

9.3.1a trade name of the pesticide
9.3.1b name and content of active ingrdients
9.3.ç type of pesticide
E.g. insecticide,
9.3.1d type of formulation
9.3.1e net capacity expressed in international measuring units

9 a very visible indication of the risk
By a coloured band the bottom of the label in accordance with the WHO classification of the pesticides

9.3.3 indications on correct use of the contents
9.3.4 the name and the address of the Manufacturer ("Pesticide manufactured by.....")
9.3.5 the number of homologation ("N° of homologation: ..... ")
9.3.6 the number of the batch
9.3.7 the date of manufacture or formulation ("Manufactured the ..... ")
9.3.8 the expiration date ("to use before.....")
9.3.9 the inscription of the mention: "To read carefully the note before the use"