STUDY ON THE INFLUENCE OF FOOD PRODUCTS WITH PESTICIDES AFTER HUMAN HEALTH

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ABSTRACT: Chemical pesticides are therefore a good example of compounds whose application is risky. However, their main beneficiary is agriculture. Here they are applied for the protection of plants during vegetation but also for the purpose of plant protection after harvesting in means of transport and warehouses. Pesticides are characterized by a lack of selective action; they can cause acute poisoning to people, especially those who work on their production and application. Also, under the influence of pesticides, in addition to insects that destroy plants during vegetation and after harvesting, they can perish under the influence of pesticides and useful bees, and when weed control can suffer even plants whose protection is followed. Such situations are aggravated by the incorrect application of pesticides. The term pesticides includes all substances or mixtures of substances used to: prevent the development or control of any unwanted plant or animal organism; o regulation of plant growth, defoliation and drying. The application of pesticides in agriculture, veterinary medicine, various industries (textiles), households and the protection of the health of the population aims at the quantitative and qualitative improvement of food, feed and industrial products, their insurance during the preservation of pests and diseases, the protection of animals against parasites as well as the destruction of insects and other disease transmitters in humans and animals.

Keywords: food, pesticides, contamination

1. INTRODUCTION

Pesticides are toxic substances, poisonous, but necessary in an ecosystem. Man, as part of a complex ecosystem in which it is linked to a large number of plant and animal species is directly affected by the use of pesticides.

Any decline of a species causes an imbalance of the ecosystem with unpredictable, long-term effects on humans. The use of these chemicals, pesticides, produce the death of some species, but also effects in the behavior and physiology of wild species. Man is exposed to pesticides by contaminating the environment in which he lives and carries out his activity.

The toxic effects of pesticides are given by the chemical structure of pesticides, the mechanism of action and the transformations that take place in the animal's body. Not all animals react in the same way and can give a specific response depending on the species or individual. The system of an animal species can metabolize the pesticide into non-toxic metabolites, instead other species cannot give a specific response.

Toxic effects are different from one species to another, one exposed species may have skin irritations and other liver disease. These effects can change depending on age, sex, size and overall animal health. Acute effects are coughing, irritation of the eyes, skin, airways, muscle spasms and even death. Chronic effects are due to repeated exposure to pesticides and are manifested by neurological damage, lung cancer, leukemia, Parkinson's disease, kidney disease, reproductive dysfunction, endocrine disorders, sterility. [2]

Pesticide classification

a) Fungicides and bactericides may be: inorganic, organic, organometallic, nitroderivates, dicarboximids, diazines, thiadidiazinines;

b) Insecticides: organochlorinated, organophosphoric, carbamic, pyrethrinoid;

(c) Acaricides: carbinols, sulfons and sulfonates;

d) Nematocides and soil sterilizers;

(e) Rodenticides , molluscs and repelents;

f) Herbicides : ariloxyacids, nitroderivates, diazines and triazines, amides, carbamates;

g) Growth regulators.

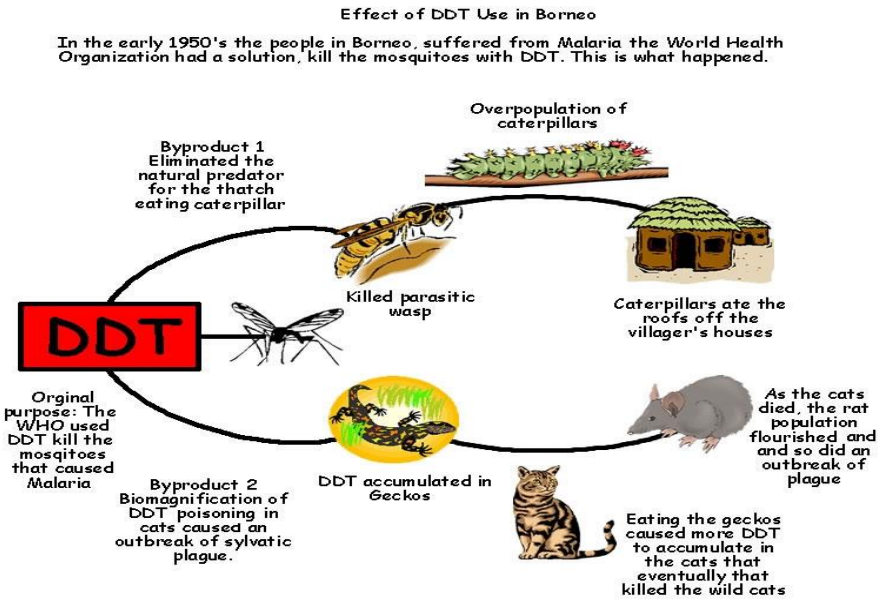
By degree of toxicity, pesticides are graded into 4 groups in relation to the mean lethal dose DL50:

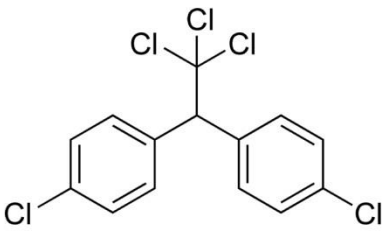
- group I: highly toxic products containing the active substance with DL50 below 50 mg/kilocorp; [5]
- group II: highly toxic products containing active substance WITH DL50 between 50 and 200 mg/kilocorp;
- group III: moderately toxic DL50 products between 200 and 1000 mg/kilocorp;
- group IV: low toxicity products containing active substance with DL50 over 1000 mg/kilocorp.

Greater attention will be paid to the contamination of food products with insecticides because some of them in addition to the pathogenic character also have mutagenic and carcinogenic potential.

ORGANOCLORULATE INSECTICIDE

1. **D.D.T** (1,1,1 triclor-2,2-bis-(elorfenil)-etanul) has the following structural formula:



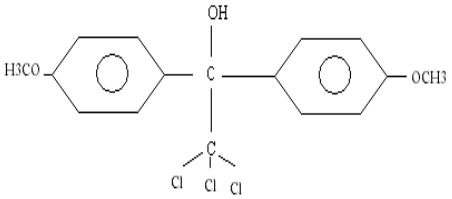


Characteristics of DDT:

- is known by the following trade names: Detox, Detexan, Gesarol, Gesapon, Dicopan and Neocid;
- is hardly soluble in water, soluble in organic solvents, in fats;
- It is stable in acidic and neutral environment. In alkaline environment it degrades quickly;
- At temperatures above 100°C it decomposes;
- Has a relatively high toxicity: DL50=500 mg/kilocorp;

Being fat-soluble, it accumulates in fat tissue. Long-term ingesting leads to chronic poisoning with liver and central nervous system damage.

2. Metoxiclorul [2,2-bis (p-metoxifenil)-l, 1, 1-tricoloretanul], also known as Metoxi-DDT, Marlat 2-MR (24% metoxicor) and Marlat 50 (50% metoxic). [10]

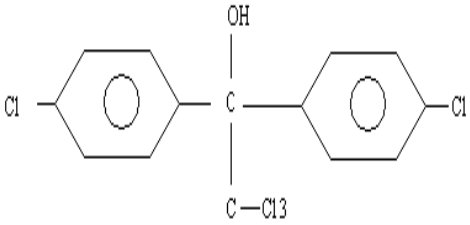


Characteristics of metoxicor:

- is a solid substance;
- It is presented in the form of dimorphic crystals insoluble in water, soluble in organic solvents, animal fats, vegetable oils;
- It is more stable than the DDT. It has an increased remanence on treated products;
- It has the property to accumulate in the body, as well as DDT and to excrete through milk;
- In chronic intoxication with metoxics, kidney and liver damage occurs;
- It is less toxic than DDT.

3. Keltanul [l-hidroxi-l-bis(4-clorfenil)-2,2,2-tricloretanul]

- is in the form of a white crystalline substance, insoluble in water but soluble in organic solvents;
- is used as an insecticide, especially as a spruce in agriculture;
- Toxicity is relatively reduced, DL50=809 mg/kilocorp (oral) in rats;
- Has the following structural formula:



4. *Hexaclorciclohexanul*

- is known by various trade names (Hexatox, Lindan, Lindatox, Exit, Gramexan, Jacutin, Viton, Rapidin, etc.);
- Insecticide is stable against acids, air, heat and light;

Repeated ingesting has the property of cumulation in the body, depositing in fat tissues; can be excreted in milk. In chronic intoxication, liver damage occurs.

5. Pentaclornitrobenzenul (C_6C1_5—$N0_2$)

- known as PCNB, Brassical and Terrachlor are used as fungicide, with high remanence on treated products;
- Has low toxicity, DL50=1 650 mg/kilocorp.

6. AIdrinul şi Dieldrinul: are highly toxic and deposit in fat tissues.

7. Clordanul *(*l,2,4,5,6,7,8,8-octaclor-2,3,3a,4,7,7a-hexahidro-4,7-metano-l H-inden*).*

- Has the following trade names: Aspon, Belt, CA 68, 1068, Chior dan, Chlorindon, Florodan, Corodau, Donwchlor, Niran, Toxichlor, Topiclor, Versicol 1068;
- Chlordean is used as an insecticide in a wide variety of fruits, vegetables and other agricultural products;

In a significant number of animals, hepatocellular carcinomas were recorded, especially at doses of 25 and 50 mg/kg. The effect of embryotoxicity and teratogenicity has also been recorded in this insecticide. Acute symptoms were recorded in humans including nerve phenomena,

seizures, lack of coordination of movements (Aldrich, 1969). These symptoms were observed at the dose of 100 mg/kg, with doses above 100 mg/kg fatal (Derbes, 1955). Several cases of accidental chlordan poisoning have been cited. Thus, the case of a chlordan contamination of drinking water is reported when 13 people presented a clinical picture with gastrointestinal disturbances (nausea, vomiting) and the appearance of neurological symptoms (Harrington, 1978).

8. l,2-Dibrom-3-clorpropanul.

It is known by the following trade names: DBCP, dibromlorpropan, BBC-12, Fumagon, Fumazone, Nemabrom, Nemafume, Nemagon, Nemanax, Nemapaz, Nemaset, Nematox, OS 1897. This insecticide has a specific activity for nematodes. It is used in soybean sona, citrus fruit, peach, pineapple

- The mutagenic action of the product has been demonstrated by short-term tests.
- Sperm activity was found in humans due to the action of dibromlorpropane.

Biphenyl polychloride (PCB), although it belongs to the category of organochlorinated contaminants, is not used as a pesticide. The commercial product is manufactured by progressive chlorination of biphenyl in the presence of a catalyst, this direct chlorination leading to a mixture of compounds whose chlorine content is variable. PCB is used in transformers (dielectric property), hydraulic systems, as a plasticizer of oils for paintings and pesticides, as a lubricant of oils, etc. In case of direct contact with the environment it is irretrievable.

Its accumulation in the organisms of life depends on local pollution, the content in the fatty tissues of the organism; the food stage of the organism and the food pathways. In mammals PCB is absorbed well through the gastrointestinal, pulmonary and skin pathways. It is stored mainly in fat-rich tissues (adipose tissue). It has been observed to penetrate through the transplacental membrane.

2. ORGANO-FOSFORICE INSECTICIDE

Organophosphoric insecticides in quantities of the order of several milligrams (depending on the structure of the compound) produce extremely serious toxic phenomena. Organophosphoric insecticides, reached in the body on one of three pathways (digestive, pulmonary, skin), have the ability to strongly inhibit cholinesterase activity. The anticolinesterase effect translates into the accumulation of acetylcholine, blocking the transmission of nerve impulse to the synapses and the neurotisular junction, triggering hyperactivity of the parasympathetic, somatic and motor nerves, as well as the central nervous system. The most important representatives of organophosphoric insecticides are: paration, malation, ethion, rogor, gution, phosphine and dichlorvos.

Parationul (tiofosfatul de 0,0-dietil-0-4-nitro-fenil)

The product is known as Ekatox 20 and 50, E 605, compound 3422, Thiophos, NIUF 100, Niram, Alcron, Genion, Penfos, Foskil, Vapofos, SNP, DNT, DPP', Bladan, Fosphenol, Folidol, Lorotion 50; The product is presented as an colorless white oily liquid of molecular weight 291,27, melting point at 6,1 °C, boiling point at 157 to 161 °C at 0,6 mm Hg and 375 °C at normal pressure; It is marketed in the form of a technical product at a concentration of 10 to 50 %. In order to draw attention to its toxicity, the product shall be colored green or blue. This product is referred to as the "green apoise" by Paris. The Paris green is, however, copper acetate, which in terms of toxicity is approaching parathion.

The parathion is used as a solution of 0,01-0,5% and as a 1-2% dust powder. Due to its efficiency it applies in quantities of 0,250-1,5 kg/ha. In order to eliminate the risk of toxicity, it is recommended that the harvest of agri-food products be carried out at least four weeks after the date of application of the parathion. The parathion concentration which produces no toxic effect in humans shall be 0,05 mg/kilocorp.

Malationul [0,0-dimetil-S-(l,2-dicarbo-etoxi-etil)-ditio-fosfatul]

The material is presented in the form of a yellow, oily liquid; molecular weight 330; melting point 2,85 °C; boiling point 156 to 157 °C; density 1,495; very poorly soluble in water (145 mg/L); soluble in organic solvents; non-soluble in alkaline medium;

The tolerance on foodstuffs is approximately 8 mg/kg. Toxic action and symptomatology are similar to parathion's. Rogor (0,0-dimethyl-S(N-methyl-carbamoyl-methyl)-phosphoro-dithionate) as a co-inhibitor of cholinesterase. It has the property of

decomposition, resulting in products more toxic than the original substance.

CONCLUSIONS

Half of the fruit, vegetables and cereals are now contaminated with pesticides; a substantial rise in pesticide levels has been seen only in the last five years Five of the most common food pesticides are classified as carcinogenic, mutagenic or some hormone system disorders. (Maneb, Procymidone, Iprodione, carbendazim, Deltamethrin). The worst affected foods include grapes (71% contaminated), bananas (56% contaminated) and peppers (46%contaminated), while one in 25 eggplants tested contains pesticides above the maximum permitted statutory limit. Almost half of the fruit, vegetables and cereals sold in the European Union are particularly dangerous to health, as they contain a record number of pesticides. Among the most contaminated are grapes, bananas and peppers.

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