Pesticides can be a pest!

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Pesticides are agents which control pests that are harmful to mankind either by causing human disease or by damaging food crops. Most pesticides are chemicals, and they are chosen because of their beneficial effects in controlling human disease and their ability to increase food production. Pesticides can be classified according to the type of pests which they destroy, such as insecticides, rodenticides, fungicides or herbicides. It is also possible to classify them according to their chemical structure. But aside from their beneficial effects, many have the potential to cause harm to human health. They should therefore be used in ways that will maximize their benefits, while minimizing or totally controlling their adverse effects.

The use of chemicals as pesticides dates back to the classical Greek and Roman periods. Substances such as sulfur, arsenic, nicotine and pyrethrum have been used in various cultures and societies from ancient times. What is new is that now we have available extremely effective and therefore more toxic pesticides. Consequently there is increasing concern about their possible harmful effects, particularly since it is recognized that everybody is exposed to pesticides to some extent. The question that arises is whether such exposure is necessarily harmful. Two statements can help us to answer this.

- “There are no harmless substances. There are only harmless ways of using substances.”
- “All substances are poisonous – it is the dose that matters.”

These statements underline the need to use pesticides safely, and at the same time help to allay anxieties about their potential to cause harm.

A large proportion of acute pesticide poisoning cases and deaths are the result of suicide or attempted suicide, using chemicals which are readily available. The most hazardous of these substances should therefore be securely controlled.

One-fourth used in Third World

The use of pesticides is steadily increasing. About 25% of the current total use of pesticides occurs in the developing world, while globally it has doubled about every ten years since 1945. Their use in developing countries doubled between 1983 and 1993.
There are two types of exposure situations, one in which the exposure is for a limited period and the other for a prolonged and continuous period. The former may result in acute poisoning, and the effects follow soon after exposure. The second type may result in chronic poisoning, where the effects are not clearly linked to the exposure, i.e., there is a time-lag between exposure and effect, while the effects are usually due to prolonged exposure to the chemical at low-dose levels that do not cause any acute effects.

The acute and chronic toxic effects of pesticides may occur in the workplace (manufacture and packaging, mixing, spraying, etc.) or from non-occupational accidental exposure (eating or drinking contaminated food, etc.). Another important source of exposure to pesticides is intentional swallowing in suicides and attempted suicides.

The extent of acute pesticide poisoning is unacceptably large, although it is impossible to give precise figures for the number of cases on a world-wide scale. Almost all cases of acute pesticide poisoning occur in the developing world, even though it uses only 25% of the world’s production of such substances. Industrialized countries have developed adequate control mechanisms to prevent such poisoning, even though they use pesticides extensively. The lesson for the developing world is that these chemicals can be used safely. A large proportion of cases and deaths occur as a result of suicides and attempted suicides. This indicates that pesticides are used as a suicidal agent because they are readily available.

### Long-term exposure

Pesticides may enter the body orally, or by breathing or through the skin. In acute poisoning at the workplace, the most important route of absorption is through the skin, whereas in accidental or intentional poisoning (suicide), the route of absorption is usually oral. The general public is exposed to these substances by contamination of the air, food and water from pesticide use for agricultural or public health purposes. The health consequences of such exposure is a matter of controversy, largely because of a lack of scientific data on the long-term effects of low doses of pesticides on human health.

### Controlling the problem

The control of chronic health effects resulting from exposure to pesticides calls for an open mind as well as further evidence from epidemiological studies on human populations.

As acute poisoning is an established and major concern in developing countries, urgent action is required now to control the problem. Since we know that about two-thirds of the problem is due to suicide, every effort must be made to control this social plague. One of the best approaches is to follow the example of the industrialized countries which control the availability of pesticides according to their hazard potential. This is particularly relevant to developing countries in that—even though these countries have legislation to control the availability of such chemicals—the legislation is poorly implemented due to a lack of resources. These countries need to consider a system of selectively applying legislation in order to focus attention on effectively controlling the availability of the most hazardous pesticides.

Such pesticides are readily identifiable from WHO's Recommended classification of pesticides by hazard and guidelines to classification, 1992-1993. Those substances belonging to class 1A (“extremely hazardous”) and those in Class 1B (“highly hazardous”) should have their availability severely controlled. This is a necessary step in any attempt to prevent the unnecessary deaths and acute poisoning cases due to pesticides.

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