

HUMAN AND ENVIRONMENTAL RISKS OF OBSOLETE PESTICIDES

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Pesticides have been used worldwide in agriculture to fight pests, to increase output, and control tropical diseases. But when pesticides can no longer be used for their intended purpose (for instance, due to deterioration or age) they become obsolete. Therefore the problem with the Obsolete Pesticides (OPs) is not connected to their usage, but with social risks stemming from their inadequate management and storage relates to: 1) public health and environmental quality and 2) agricultural production and trade.

The problem dates back to the 1950s and 1960s. To date, it has been estimated that approximately 260,000 tons of OPs are at tens of thousands of locations in the countries of the former Soviet Union, the Southern Balkans and new EU member states. Many warehouses with obsolete pesticides are not managed properly therefore chemicals can leak into the soil and pollute agricultural lands and ground water.

OPs can be treated in different ways to reduce the harm they cause. Those methods are: environmentally safe disposal, incineration, chemical degradation, biological treatment methods, including composting, landfarming, and bioaugmentation/biostimulation, adsorption, flocculation, coagulation. But one of the most progressive methods is advanced oxidation processes (AOPs) (UV/ozonation, photoassisted Fenton reaction, photocatalysis using TiO₂). AOP is the combination of methods, which makes the pesticide degradation more effective and less expensive. Nowadays this process is widely used for treatment of water contaminated with persistent organic pollutants. It gives knowledge about the process characteristics. Chemical reaction depends on the nature and concentration of reactants, pressure, temperature, pH.

More studies on AOP are necessary to investigate the most optimum conditions of its usage for OPs degradation.

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