

## THE BIOSPHERE AND PLANT CHEMICAL POLLUTION

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Development of industry and transport and intensified chemicalization of agriculture is accompanied by systematic environmental pollution. Pollutants in the biosphere undergo various chemical conversions: they interact with each other, are photochemically oxidized, polymerized, etc. Incidentally, new highly toxic substances (the so-called “secondary pollutants”) are often produced. The “longevity” of a chemical pollutant in the biosphere depends on the chemical nature of this substance, on its reactivity as well as on the conditions of the environment. Together with nutrients plants absorb compounds polluting the biosphere. The toxic gases contained in the air mainly absorbed through leaves.

In order to become incorporated into the total metabolism of the plant cell the foreign substance should be dissolved in water or fat, i.e. in the very medium in which biochemical reactions usual occur.

Detoxication of organic pollutants in plants may occur in three ways, one being the release of the organic substances absorbed by plants in an unaltered form. The substances absorbed by leaves is excreted by the root system and vice versa, the toxicant absorbed by roots is released through leaves. Binding of foreign organic substances with endogenous compounds of the cells in another pathway of detoxication in plants. To these processes belong e.g. reactions of glycosylation of foreign substances with the participation of the donors of hydrocarbon residues uridinediphoglucose or uridinediphogalactose, the reactions, of combination of organic xenobiotics with amino acids, peptides, proteins, etc. The resulting conjugates are localized in the vacuoles. The third pathway of detoxication of organic xenobiotics consists in their intense oxidation. Here, the molecule of xenobiotics undergoes hydroxylation, decarboxylation, deamination dealkylation,  $\beta$ -oxidation and other conversions, ultimately leading to total degradation. As a result the endogenous metabolites of the cell are produced from the molecule of xenobiotics.

Plants possess varied stability to exposure to the chemical pollutants of the biosphere. Their capacity to absorb and detoxicate foreign substances differs as well. Data on plant stability to various types of atmospheric pollution as well as a list of plants capable of absorbing hydrocarbons in larger quantities from the atmosphere are presented in the appendixes.