

4. Exposure pathways

There are many types of substances which are suspected to have endocrine-disrupting actions, ranging from pesticides to environmental contaminants. They include active ingredients of pesticides, industrial chemicals, pharmaceuticals, and plant hormones. Exposure pathways are very complicated. It is very important to clarify how people are exposed to individual chemicals, in order to evaluate their potential effects and to take necessary measures against these effects. Below are some possible pathways, based on current reports.

- Air (inspiratory)
Indoor air, household articles, the atmosphere.
- Food and other oral pathways (oral)
Foods (e.g., meat, milk, vegetables, drinking water), and additionally for infants, toys and other substances.
- Direct contact (percutaneous)
Toys, household articles, soil.

Chemicals used for many purposes generally have multiple exposure pathways. Phthalic acid esters, which are used as plasticizers, have a wide variety of pathways including air, foods (including drinking water), and direct contact. Also, the major pathways of dioxin are reported to be air, foods, and soil. It is necessary to investigate the possible pathways for each chemical, as well as the exposure level from each pathway and the total exposure level, in order to help evaluate health effects of suspected endocrine disruptors.