

**QUESTIONS PUT TO THE DEPARTMENT OF HEALTH BY THE ABC**

Wednesday, 10 May 2017 3:59 PM

1. Does the Department of Health agree there is evidence that the following chemicals have the potential to disrupt human endocrine systems in a way that harms human health?
  - a) bisphenols (including BPA and BPS)
  - b) phthalates
  - c) Perfluorinated compounds (including PFOA, PFOS)
  - d) flame retardants
  - e) triclosan
  - f) pesticides
2. How is the use of endocrine disrupting chemicals (EDCs) regulated in Australia?
3. Is there any regulation governing EDCs specifically?
4. Why does Australia not have laws prohibiting the use of EDCs specifically, as per in Europe?
5. Does the Department of Health agree with prominent endocrinologists that there may be no safe dose of EDCs, especially when exposure occurs at critical stages of development, such as in utero.
6. Does the Department of Health advise consumers to minimise their exposure to EDCs?
7. Are all products containing EDCs available in Australia required to be labelled as such? If not, why not?
8. What bio-monitoring do Australian authorities do to evaluate exposure of the population to EDCs?
9. What systematic testing do relevant Australian authorities do to ensure endocrine disrupting chemicals are not present in imported products.

**RESPONSE FROM A SPOKESWOMAN FOR THE FEDERAL DEPARTMENT OF HEALTH**

Friday, 12 May 2017 11:36 AM

The “endocrine system” is a complex set of biological functions relating to the secretion into the blood stream of specific chemicals (hormones), which affect the function of distant organs in an organism. The endocrine system includes:

- the glands that secrete the hormones
- the metabolic processes involved in synthesising, circulating and removing hormones
- the homeostatic functions controlling hormone levels
- the receptors to which the hormones bind, and
- the effects of the hormones on the cells in the target organs.

Chemicals (both naturally-occurring and synthetic) can affect the endocrine system through a range of mechanisms. Chemicals can also affect receptors in the body that are not hormone receptors, but that can indirectly affect the endocrine system. One chemical may have an effect on more than one type of hormone receptor, or can have an effect only in particular circumstances. The effect of a particular chemical can have unique characteristics, such as its dose-response profile. The risk posed by a chemical is a function of both its intrinsic capacity to cause an adverse effect (its hazard) and the degree to which an organism is exposed to the chemical. This relates to its use, concentration, dose, route of exposure, etc.

Due to the complexity of the endocrine system and the ways in which it can be affected by chemicals, there is continuing scientific dispute about defining “endocrine disrupting chemicals” as a unique class of chemicals. For example, DEHP (a phthalate) can bind to oestrogen receptors, but its adverse effects in humans do not relate to this action. Instead, DEHP has been shown to cause adverse effects by inhibiting androgen synthesis in males at a critical stage of development. Simple measurements of hormone binding can therefore be unreliable in predicting the risk of adverse effects.

Responsibility for the regulation of chemicals in Australia is shared between the Australian Government and the states and territories. Generally, the Australian Government takes responsibility for regulating the introduction (e.g. importation) of chemicals, whereas states and territories regulate their use and disposal. Further, different government agencies have a role in chemical regulation depending on the use of the chemical (e.g. therapeutic use, agricultural and veterinary use, use in food etc.).

The Department of Health regulates the introduction of industrial chemicals through the National Industrial Chemicals Notification and Assessment Scheme (NICNAS). NICNAS has published risk assessments of chemicals (<https://www.nicnas.gov.au/news-and-events/Topics-of-interest/subjects/endocrine-disrupting-chemicals>) that can cause adverse developmental effects via mechanisms involving some aspect of the endocrine system. These include certain of the phthalates NICNAS has assessed and a subclass of brominated flame retardants. These brominated flame retardants are known to have an indirect effect on thyroid hormone levels. For each of these chemicals, the effects are dose-responsive. These well-characterised examples with a classical dose-response effect allow a safe level of exposure to be identified and risk mitigation measures put in place.

The European Food Safety Authority (EFSA) has published an exhaustive systematic review of information on BPA, but could not confirm ‘endocrine disruption’ as the mechanism by which the chemical caused its toxic effects. Similarly, although there is experimental evidence of endocrine effects from exposure to perfluorinated chemicals, the main toxic effects in rodents is also thought not to arise from ‘endocrine disruption’.

A recent review by Health Canada found experimental evidence of effects of triclosan on thyroid hormones, but not at doses relevant to human exposure. Epidemiological studies cited in this review also did not find thyroid effects in humans exposed to this chemical.

Where a risk of adverse public health effects from exposure to a chemical has been demonstrated, all Australian jurisdictions cooperate in the control of access to chemicals by scheduling them under the Poisons Standard (<https://www.tga.gov.au/publication/poisons-standard-susmp>).

This covers effects mediated through the endocrine system or through any other means. Where a NICNAS risk assessment has demonstrated a public health risk from an industrial chemical, recommendations are made for the chemical to be included in the relevant schedule. Identified public health risks from the use of pharmaceutical and agvet chemicals are also referred for scheduling under the Poisons Standard.