



# **REVIEW OF THE EPA'S PROPOSED ENVIRONMENTAL ENDOCRINE DISRUPTOR SCREENING PROGRAM**

**REVIEW OF THE ENDOCRINE  
DISRUPTOR SCREENING  
PROGRAM BY A JOINT  
SUBCOMMITTEE OF THE  
SCIENCE ADVISORY BOARD AND  
SCIENTIFIC ADVISORY PANEL**







































































The Subcommittee believes that the five specified compartments should be adequate for detecting endocrine mediated events in most animal species. However, the Agency needs to be cognizant that there may be exceptions in some cases (e.g., reptiles, for which there are no EPA guidelines). The Subcommittee also concluded that many of the proposed tests were valid assays of endocrine disruptors. They also concluded that methods must be standardized and validated, based on accepted criteria for validation and regulatory acceptance of toxicological test methods. Other tests, however, met with considerable criticism:

- a) A more comprehensive, *in-utero* test battery should be assembled to replace several tests in Tier 1 (see sections 3.4.1 and 3.4.4)
- b) The Daphnia developmental assay should be considered as a replacement for the mysid assay because there is a better understanding of the endocrine mechanisms in Daphnia (Baldwin *et al.*, 1998; Baldwin and LeBlanc, 1994).
- c) The fish assay for endocrine disruption should include the measurement of vitellogenin in male fishes. Vitellogenin is a yolk precursor protein made by the liver in response to estrogen in female but normally not in male oviparous animals. Its detection in male fish is a highly sensitive assay for estrogenic activity. Many laboratories have the ability to detect vitellogenin by radio immunoassay in a variety of species. There are no known barriers to the development of such a vitellogenin test, although it would still have to be standardized and validated.
- d) The fish reproduction assay should include some measure of the reproductive fecundity of the selected compounds. Egg production and developmental success will detect effects which may not be obviously toxic to the organism but might have detrimental effects at the population level. None of the proposed tests with wildlife detect breeding success. Further, exposure to a variety of compounds can alter the sex ratios to favor one sex or the other. The effect of the test chemicals should include an evaluation of the sex ratios of eggs (or other stages of development) treated with the chemicals.
- e) The Subcommittee recommends that the EPA examine the use of the Japanese quail to substitute for the proposed avian tests on Bob-white quail and mallard ducks. Japanese quail have the advantage of short generation time and provide a model with a great deal of background information.
- f) Although the Tier 2 tests designed to indicate thyroid alterations should “identify effects of concern” they will not effectively determine whether those hormone alterations have adverse effects on the development or function of the target tissues for thyroid hormones. Thus, the proposed tests may be adequate for detecting hormone perturbations but they don’t give information about the effects of those perturbations (see additional information in section 3.4.6).





















