Deriving a health-based guidance value for boron to support development of UK Drinking Water Standards

Introduction and Background

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This is a paper for discussion. This does not represent the views of the Committee and should not be cited.

Introduction

1. The UK Health Security Agency (UKHSA) advises the Drinking Water Inspectorate (DWI) on potential health risks from chemicals in drinking water. Following EU exit, the DWI is reviewing the regulatory standards for some chemicals in drinking water, including boron. UKHSA is seeking advice from the Committee on Toxicity of Chemicals in Food, Consumer Products and the Environment (COT) with respect to an appropriate health-based guidance value (HBGV) for Boron.

2. This discussion paper examines the toxicity studies on boron which underpin the evaluations by different authoritative bodies.

3. The COT is asked to consider these studies, the interpretations by the various authoritative bodies and determine an appropriate Tolerable Daily Intake (TDI) to support an update to the boron drinking water standard in the UK.

Background

4. COT has previously reviewed the available toxicity data on boron and boric acid in 1994 and 1995. It determined a No Observed Adverse Effect Level (NOAEL) of 9.6 milligrams per kilogram body weight per day (mg/kg bw/day) (rounded up to 10 mg/kg bw/day) for critical adverse effects in developmental studies in rats (reduced fetal weight and skeletal effects). Applying a default safety factor of 100, the Tolerable Daily Intake (TDI) was calculated as 0.1 mg/kg bw/day (COT,1995).