

## Studies confirm the safety of the use of antimony compounds for PET bottles

The **International Antimony Association (i2a) VZW** is an international non-profit association whose mission is to gather, study, and disseminate information on the safe use of antimony and antimony compounds, especially with regard to the relevant environmental, health and safety regulations.

Antimony compounds (such as antimony trioxide (CAS 1309-64-4), antimony tris(ethylene glycolate) (CAS 29736-75-2) and sodium antimonate A (CAS 15432-85-6) are **widely used as polycondensation catalyst** for the manufacturing of PET (*polyethylene terephthalate*). Typical total antimony ('Sb') concentrations in PET are 150-250 mg/kg. More than 75% of PET end-uses in the EU is for bottles to store waters, soft-drinks, edible oils and pharmaceuticals<sup>1</sup>.

Many years of industrial practice have **demonstrated safety and efficacy** of Sb compounds for the manufacturing and use of PET bottles. The safe production and use of Sb compounds for human health and the environment has been confirmed in assessments by authorities worldwide such as EU (2008)<sup>1</sup> and Canada (2010)<sup>2</sup>, and in the EU-REACH dossiers submitted to ECHA (*European Chemicals Agency*) by the i2a members in 2010-2013<sup>3</sup>.

Worldwide authorities have derived **maximum allowable concentrations** for Sb in drinking water to protect long-term consumers' health. The threshold values are of a conservative nature and are set at 5 µg/L by EU<sup>4</sup>, 6 µg/L by US EPA<sup>5</sup> or 20 µg/L by WHO<sup>6</sup>.

After reaction, the Sb-ions are covalently bound to the PET matrix<sup>7,8</sup>, and the migration potential of Sb-ions is limited<sup>9</sup>. Only minor amounts of Sb can migrate from the PET matrix to bottled water. Under normal and foreseeable conditions of use (cfr. storage conditions and expiry data indicated on the bottles), the Sb concentrations in PET bottled waters do by far **not approach the threshold values** set by regulators<sup>9-12</sup>.

Migration of Sb is only enhanced by unrealistic, extreme treatments such as long term exposure at extreme heat or irradiation. Considering the **poor systemic availability** of Sb in humans<sup>1-3,13,14</sup> and given the conservative nature of the WHO drinking water threshold value\*, there is **no concern for any effect** of Sb in PET bottled waters on human health or the environment<sup>1-3,9-12,14</sup>.

***The above shows there is conclusive scientific evidence  
that the use of antimony compounds as catalyst for PET bottles  
is safe for human health and the environment.***

If you have further questions related to antimony, please do not hesitate to contact us.

*\*ATO has been subject of a toxicological review by the WHO (World Health Organisation) in 2003 in which, following an extensive review of the latest scientific data, the WHO guideline value was increased from 5 µg/l to 20 µg/l in drinking water, reflecting increased margins of consumer safety. A guideline value is defined as the concentration of a constituent that does not result in any significant risk to health over a lifetime of consumption. The WHO has also noted that this guideline value of 20 µg/l might be highly conservative, because of the large uncertainty factor of 1000 that was used.*

<sup>1</sup>EU-Risk Assessment Report for Antimony Trioxide, 2008; <sup>2</sup>Environment/Health Canada, 2010; <sup>3</sup>available at <http://echa.europa.eu/information-on-chemicals/registered-substances>; <sup>4</sup>EC, 1998; <sup>5</sup>US EPA, 2010; <sup>6</sup>WHO, 2003; <sup>7</sup>Biros et al., 2002; <sup>8</sup>Duh et al., 2002; <sup>9</sup>Welle and Franz, 2011; <sup>10</sup>Bach et al, 2012; <sup>11</sup>Andra et al, 2011; <sup>12</sup>Bach et al, 2013; <sup>13</sup>US EPA, 2012; <sup>14</sup>OECD, 2008