

CLINICAL SPECIFICATIONS

TETRABROMOBISPHENOL A

Chemical Found In:

Tetrabromobisphenol A (TBBP-A) is a chemical derivative of bisphenol A. TBBP-A is commonly found in electronic circuit boards and as a flame retardant in foam.

Sources:

<https://www.epa.gov/sites/production/files/2016-01/documents/flamefaq.pdf>

https://pubchem.ncbi.nlm.nih.gov/compound/Tetrabromobisphenol_A#section=Top

Known Cross-Reactions:

Clinical Significance:

The detection of antibodies to Tetrabromobisphenol A (TBBP-A) bound to human protein in serum indicates a breakdown in immunological tolerance and induction of chemical intolerance. TBBP-A or its metabolites can bind to human tissue proteins and form neo-antigens. These new antigens are comprised of the haptenic chemical plus the tissue antigen. The formation of neo-antigens initiates an immune response which may result in antibody production against the chemical and the human tissue. Continued exposure to the chemical and the subsequent production of antibodies against various tissue antigens, may result in autoimmune reactivity.

Persons with antibodies to TBBP-A bound to human protein in serum should avoid exposure to the substance.

References:

1. Al-Mousa and Michelangeli. Some commonly used brominated flame retardants cause Ca²⁺-ATPase inhibition, beta-amyloid peptide release and apoptosis in SH-SY5Y neuronal cells. PLoS ONE, 2012; 7(4):e33059. doi:10.1371/journal.pone.0033059.
2. Kitamura, et al. Thyroid hormonal activity of the flame retardants tetrabromobisphenol A and tetrachlorobisphenol A. Biochem Biophys Res Communications, 2002; 293:554-559.
3. Ogunbayo and Michelangeli. The widely utilized brominated flame retardant tetrabromobisphenol A (TBBPA) is a potent inhibitor of the SERCA Ca²⁺ pump. Biochem J, 2007; 408:407-415.
4. Okada, et al. Inhibitory effects of environmental chemicals on protein disulfide isomerase in vitro. Osaka City Med J, 2005; 51:51-63.
5. Rosenberg, et al. Exposure to flame retardants in electronics recycling sites. Ann Occup Hyg, 2011; 55(6):658-665.
6. TCI America. Tetrabromobisphenol A Material Safety Data Sheet - T0032:2005.