Common Synthetic and Naturally Occurring Haloalkanes

DDT (insecticide)  \( \text{LD}_{50} = 115 \text{ mg/kg} \)

methyl ether of a trichloroorcinol  
(fungicide produced by water lilies)

Cytotoxic sulfolipid from *Mytilus galloprovincialis*  
\( \text{IC}_{50} = 13 \text{ µM} \)
sucralose (Splenda™)
400-800 times as sweet as sugar

sucrose
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What is the theoretical maximum number of stereoisomers can this sugar substitute have?

$$2^n, \text{ where } n = \text{number of stereogenic groups: } 2^9 = 512$$
Remember, “stereogenic groups” refers to any stereochemistry-producing functional group.

So, \((R), (S)\) chirality centers and \((E), (Z)\) double bonds count:

- \((2E,4R)\)-4-bromo-3-methyl-2-hexene
- \((2E,4S)\)-4-bromo-3-methyl-2-hexene
- \((2Z,4R)\)-4-bromo-3-methyl-2-hexene
- \((2Z,4S)\)-4-bromo-3-methyl-2-hexene