



Research progress on the precursors and formation mechanisms of typical N-DBPs in drinking water

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Received 7 August 2017; Accepted 27 May 2018

ABSTRACT

Recently, the highly pathogenic and carcinogenic nitrogen disinfection byproducts (N-DBPs) have been found to be prevalent in disinfected drinking water, causing widespread concern. This review summarizes the major findings related to N-DBPs in drinking water over the previous decade. In particular, the review focuses on the known precursors and formation mechanisms of N-DBPs. New information regarding precursors and mechanisms is also discussed. N-DBPs include the halonitromethanes (HNMs), haloacetonitriles (HANs), nitrosamines (NAs), and haloacetamides (HAcAms), among other chemicals. HNMs are mainly generated through disinfectant oxidation and halogen atom substitution, while HANs are formed through a decarboxylation pathway and an aldehyde pathway. The formation of *N*-nitrosodimethylamine (NDMA) occurs in two steps: in the first, nitrite reacts with dimethylamine (DMA) to generate NDMA, while in the second, the unsymmetrical oxidation of dimethylhydrazine (UDMH) generates NDMA indirectly. The control of N-DBPs remains challenging, and the area requires additional research. This review can act as a reference for the research and control of N-DBPs.

Keywords: N-DBPs; Precursors; Mechanism; Review; Drinking water

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Presented at 2017 Qingdao International Water Congress, June 27–30, 2017, Qingdao, China.

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