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### Heterocyclic aromatic amines and their contribution to the bacterial mutagenicity of the particulate phase of cigarette smoke

Heterocyclic aromatic amines (HAAs) rank among the strongest known mutagens. Approximately 30 HAAs have been found in cooked foods (broiled, fried, and grilled) and several HAAs have been characterized as animal carcinogens. Nine HAAs have also been reported to be constituents of cigarette smoke (CS) raising concerns that HAAs might contribute significantly to the known carcinogenicity of CS. An improved method for the quantification of HAAs in the total particulate matter (TPM) of CS is reported allowing detection and quantification of 8 HAAs in a single run. The mutagenic potency of these HAAs and that of TPM from the reference cigarette 2R4F was determined in the Salmonella Reverse Mutation Assay (Ames Assay) with tester strain TA98 and a metabolic activation system. The 8 HAAs, when applied together in the Ames assay, showed a clear sub-additive response; that means that mixes of the 8 HAAs gave rise to responses that were distinctly below that expected under the assumption of additivity for the single HAAs. Likewise, the combination of HAAs and TPM, if at all, gave rise to a slight sub-additive response. In both cases, however, the sub-additive response in the Ames assay was observed at HAA doses that are far above the amounts found in CS. The contribution of the individual HAAs to the total mutagenic activity of TPM was calculated and experimentally confirmed to be approximately 1% of the total mutagenic activity. Thus, HAAs do not contribute significantly to the bacterial in vitro mutagenicity of TPM in CS.

### Biography

Regina Stabbert received her Ph.D. in chemistry in 1992 from the University of Cologne. She is Principal Scientist working in the team Product Stewardship at Philip Morris International, RRP and is a manager with more than twenty years of experience in cigarette smoke chemistry, toxicology and aerosol science. She has published more than 15 papers in peer-reviewed journals.

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