Since 1977, the IARC Monographs Programme has conducted several evaluations of the carcinogenic hazards of dioxins, polychlorinated biphenyls (PCBs) and polybrominated biphenyls (PBBs) (see overall evaluations).

In October 2009, in the frame of the re-evaluation of 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD) in volume 105F, PCB 126 was upgraded to Group 1 and the Working Group recommended an in-depth re-evaluation of agents with properties similar to TCDD.

In February 2013, the Monographs programme conducted a re-evaluation of PCBs and PBBs.

OUTCOME AND IMPACT OF THE EVALUATIONS

PCBs identified as priority agents in 2009 (IARC Technical Publication No. 42: Identification of research needs to resolve the carcinogenicity of high-priority IARC carcinogens, 2009)

IARC Monographs volume 107 meeting on PCBs and PBBs publicized to the scientific community through an oral presentation (7th International Workshop on PCBs, Arcachon, France, May 2013)

Contribution to the report by the Danish Health and Medicines Authority “Health risks of PCB in the indoor climate in Denmark” (in press)

Publication of the outcome shortly after the meeting.


HOW MECHANISMS COME INTO PLAY

TCDD was the 2nd carcinogen to be classified in Group 1 without sufficient evidence in humans, on the basis of strong mechanistic data; first subsequently confirmed by sufficient evidence in humans.

PCB126 upgraded to Group 1 on the basis of extensive evidence showing activity identical to TCDD for every step of the mechanism described for TCDD-associated carcinogenesis in humans.

“Dioxin-like” PCBs upgraded to Group 1 on the basis of evidence showing activity similar to TCDD, and as a class of compounds similar to PCB126.

“HOWEVER, the carcinogenicity of PCBs cannot be attributed solely to the carcinogenicity of the dioxin-like PCBs.”

PBBs upgraded to Group 2A with mechanistic data, based on strong similarities with PCBs.

A cascade of evaluations of individual compounds that have similarities in their biological activities, leading to a higher classification based on strong mechanistic evidence.