Press Release No. 01/2011

Press Relations Officer: Martin Ittershagen
Deputy Press Relations Officer: Stephan Gabriel Haufe
PR-staff: Dieter Leutert, Fotini Mavromati, Doreen Redlich, Martin Stallmann
Address: Postfach 1406, 06813 Dessau-Roßlau
Telephone: +49 340/2103-2122, -6625, -2250, -2318, - 2367, -2507
E-Mail: pressestelle@uba.de
Internet: www.umweltbundesamt.de

Umwelt Bundes Amt
Für Mensch und Umwelt

Baby swimming: Possible risk of asthma caused by chlorine disinfection?

UBA: For now, children younger than two with a family history of allergies should not swim in indoor pools

Swimming is good for your health, which is why—in addition to providing protection against drowning- swimming is taught at school. However, disinfection of swimming pool water requires chlorine, and the reaction products of chlorine may contribute to the development of asthma in high-risk groups. Trichloramine in particular, a reaction product of chlorine, and the urea introduced by bathers, are now suspected of triggering asthma. Whether or not damage to the lung epithelium is actually done in early childhood and might lead to asthma cannot be conclusively assessed due to lacking data on the adverse effect level of trichloramine. The Federal Environment Agency (UBA) recommends, for the sake of precaution, that concerned parents of children under the age of two from families that suffer allergies not go to baby swimming until the suspicion is confirmed. All other children and adults can continue to go to public swimming pools maintained and serviced according to generally accepted engineering standards without reservation.

UBA President Jochen Flasbarth called on the public to observe a few simple rules of hygiene when going swimming, saying, "Swimming is healthy for children and adults alike, and so that it stays that way, a thorough shower should be taken by everybody before swimming to help avert the health risks posed by trichloramine." Trichloramine is produced when chlorine in the pool comes into contact with the urea that bathers' urine, perspiration, cosmetics, or dead skin cells introduce to the water. Trichloramine causes the odour typical of indoor pools that many call the "chlorine" smell.

Flasbarth is asking that indoor pool operators make consistent use of the technology available in water treatment, saying, "Pool operators can reduce trichloramine load by feeding in adequate amounts of fresh water, venting pool areas properly, and by building and operating according to generally accepted technical standards. Modern technology and public education to raise awareness can solve the problem insofar as to minimise the health risks posed by chlorine reaction products."

Some 250-300 million people go to public swimming pools in Germany every year. Adequate disinfection—most often with chlorine- is indispensable, for someone can often be infected with a

Press Release No. 01/2011

Press Relations Officer: Martin Ittershagen
Deputy Press Relations Officer: Stephan Gabriel Haufe
PR-staff: Dieter Leutert, Fotini Mavromati, Doreen Redlich, Martin Stallmann
Address: Postfach 1406, 06813 Dessau-Roßlau
Telephone: +49 340/2103-2122, -6625, -2250, -2318, - 2367, -2507
E-Mail: pressestelle@uba.de
Internet: www.umweltbundesamt.de

pathogen without showing symptoms of disease. Should this individual go to an indoor pool the pathogens will, as a matter of course, enter the pool water. The production of disinfection by-products such as trichloramine in low concentrations is accepted as a lesser evil.
UBA tests detected airborne trichloramine concentrations at German indoor pools of up to 18.8 milligrammes/cubic metre of air (mg/m³). 90 percent of all measured levels, however, were under 0.34 mg/m³ and thus well below the concentration of 0.50 mg/m³ recommended by the World Health Organization (WHO). In the cases where high concentrations were measured, the venting systems did not comply with generally accepted technical rules and standards [DIN 19643 or VDI 2089 Blatt 1].
Further studies must determine whether these concentrations may cause damage to the lung epithelium in young children or the extent to which they contribute to the development of asthma in early childhood. Belgian scientists first discussed a possible correlation between asthma and swimming in chlorinated pools in 2003. They hypothesised that the risk of developing asthma increases as the level of Clara cell protein in blood serum drops, for the decrease is indicative of damage to the bronchial epithelium which, if chronic, is supposed to lead to heightened risk of asthma. One substance that may trigger this effect is the disinfection by-product trichloramine. Subsequent studies affirm these suspicions and demonstrate a significant correlation between the time of first pool contact prior to age 2 and a deterioration of Clara cell protein in blood serum. Data is still lacking on the critical concentration of trichloramine and possible other by-products which either singly or collectively trigger these effects.
The Swimming Pool Water Commission of the Federal Ministry of Health (BMG) at UBA recommends using all the opportunities to limit the production or accumulation of disinfection by-products to the greatest extent possible:
Water treatment and ventilation technology must comply with generally accepted engineering standards.
Bathers must receive information about their impact on water quality, especially as concerns thorough showering prior to swimming to remove the perspiration, skin cells, cosmetics and urine residues that produce trichloramine and other disinfection by-products, and must also be instructed not to use the pool as a toilet.

Press Release No. 01/2011

Press Relations Officer: Martin Ittershagen
Deputy Press Relations Officer: Stephan Gabriel Haufe
PR-staff: Dieter Leutert, Fotini Mavromati, Doreen Redlich, Martin Stallmann
Address: Postfach 1406, 06813 Dessau-Roßlau
Telephone: +49 340/2103-2122, -6625, -2250, -2318, - 2367, -2507
E-Mail: pressestelle@uba.de
Internet: www.umweltbundesamt.de

Umwelt Bundes Amt
Für Mensch und Umwelt

Monitoring activities by pool operators and public health officials should include regular checks of chemical parameters according to the standards of DIN 19643 and the UBA recommendation, and must aim for compliance with these standards.
Despite these measures, current knowledge cannot rule out the risk of asthma development in the most sensitive group of people (children younger than 2 predisposed to allergies). Concerned parents must weigh the benefits of baby swimming against this risk.

Bulletin: "Baby swimming and disinfection by-products in swimming pools" (in German) by the Swimming Pool Water Commission of the Federal Ministry of Health (BMG) at UBA : http://www.uba.de/uba-info-medien-e/3968.html.

For more announcements from the Swimming Pool Water Commission of the Federal Ministry of Health (BMG) at UBA (in German) go to:
http://www.umweltbundesamt.de/wasser/themen/badebeckenwasser/empfehlungen.htm

Dessau-Roßlau, 10 January 2011