

# Workplace exposure to organic solvents linked to heart defects at birth

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Workplace exposure to organic solvents is linked to several types of heart defects at birth, indicates research published online in *Occupational and Environmental Medicine*.

Organic solvents are widely used for dissolving or dispersing substances, such as fats, oils, and waxes, as well as in chemical manufacturing. They are found in paints, varnishes, adhesives, degreasing/cleaning agents, dyes, polymers, plastic, synthetic textiles, printing inks and agricultural products.

Most organic solvents are highly volatile and enter the body through the lungs, but can also enter through the mouth and skin.

Industrial hygienists assessed the levels of workplace exposure to organic solvents in 5000 women from across the US, from one month before conception through to the first three months of pregnancy (first trimester).

All their babies were delivered between 1997 and 2002, and included stillbirths and pregnancy terminations. All the women were taking part in the National Birth Defects Prevention Study, an ongoing population based study that is exploring risk factors for birth defects.

The authors looked for associations between 15 categories of congenital [heart defects](#) and exposure to types of organic solvents known to be relatively common in the workplace. These included chlorinated

solvents; aromatic solvents; and a mix of C10 or higher hydrocarbons known as Stoddard solvent.

The levels of exposure were measured according to two approaches: an expert consensus-based approach and an approach based on the published evidence.

The expert consensus approach indicated that around 4% of mothers whose babies did not have birth defects, and 5% of those who did, had been exposed to an organic solvent at about the time they were trying to conceive or early in pregnancy.

This increased to 8% and 10%, respectively, using the published evidence approach.

According to the expert consensus approach, two types of congenital heart defects were associated with exposure to any solvent and to chlorinated solvents, although these associations were only of borderline significance.

The published evidence approach indicated several additional associations between [congenital heart defects](#) and exposure to organic solvents.

The authors conclude that their results suggest that exposure to [organic solvents](#) in the period from one month before conception to early pregnancy is a potential risk factor for several types of heart defects at birth.

Some of their findings back up those of other researchers, while the rest are new, they say. But they caution: "Despite the strengths of this analysis, the results do not allow for the drawing of definitive conclusions on specific exposure-congenital heart defect combinations."

Provided by British Medical Journal

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