

Teratogens

A vast majority of babies are born healthy. However, there are some known substances that are known to harm the fetus.

Known teratogens (A substance that crosses the placenta and harms the fetus, [page 47](#)) include:



- Exposure to radiation
- Heavy metals such as lead and mercury
- Drugs taken by the mother, such as alcohol, cocaine, and heroin.
- Nicotine
- Toxic industrial chemicals, such as PCBs
- Diseases, such as rubella, syphilis, genital herpes, and AIDS

Teratogens

Teratogens typically exert their damage during a sensitive period ([page 47](#)), when a particular organ or system is developing.

In general, the following principles apply to teratogens ([page 47](#)).

1. Teratogens are most likely to cause major structure damage during the embryonic phase (week 3 to 8).
2. Teratogens can affect the developing brain throughout pregnancy.
3. Teratogens have a threshold level above which damage occurs. In some cases as with alcohol, there is not a universally safe level.
4. Teratogens exert their damage unpredictably, depending on the fetal and maternal vulnerabilities. Alcohol, one of the most commonly used drugs has different effects.

Teratogens

Alcohol

The effects of small amounts of alcohol on the fetus is unknown and generally recommended that no alcohol be consumed during pregnancy. Despite these recommendations, a large-scale U.S. study found that

- 11.5 percent of adolescents and 8.7 percent of adult pregnant women reported using alcohol in the previous month.

Heavy drinking by pregnant women increases the risk of fetal alcohol spectrum disorders (FASD) that include

- facial deformities
- defective limbs, face and heart
- Most children with FASD have learning problems and are below average intelligence.
- Children with FASD have deficiencies in the brain pathways involved in working memory, lower levels of executive functioning in children, especially planning.
- FASD is associated with both externalized (acting out) and internalized behavioral problems (depression and anxiety).
- In the United Kingdom, the life expectancy of those with FASD was 34 years.

Teratogens

Nicotine

Cigarette smoking by pregnant women can adversely effect prenatal development, birth, and postnatal development. Preterm births and low birth weights, fetal and neonatal deaths, respiratory problems, sudden infant death syndrome (SIDS), and cardiovascular problems are common in infants where the mother smoked in pregnancy, increases the risk of ADHD, and increases the risk that their child will smoke at age 16.

Like with alcohol, despite the information of problems associated with smoking while pregnant, a large-scale U.S. study found that

- 23 percent of adolescents and 15 percent of adult pregnant women reported using tobacco in the previous month.

As a psychologist, this tells me that information alone is not enough to deter the use of alcohol and nicotine during pregnancy. There are social and emotional factors that need to be considered. In addition, it is easy and common to attribute bad behavior to personality factors (the fundamental attributional error) when it is not appropriate instead of social and emotional factors (the person is easier to see, where social and emotional factors are more difficult to see).

Teratogens

Marijuana:

Studying the effects associated with marijuana and pregnancy is difficult because marijuana is still listed as a illegal drug at the Federal level.

Marijuana use during pregnancy is currently associated with an infant's low-birth weight and greater risk of being placed in a neonatal intensive care unit, and still birth. As the infant grows, prenatal use of marijuana is associated with lower intelligence in childhood and increased use at age 14.

Marijuana use by pregnant women increased from 2.4 percent in 2002 to 3.85 percent in 2014. There is concern that there will be higher rates of pregnant mothers using marijuana as states legalize marijuana.

Common drugs such as aspirin have been associated with uterine bleeding and may have a connection with certain viral infections that can result in Reyes syndrome.

If we don't know the causes of development problems,

- We won't take the appropriate action
- We might take the wrong action that is not likely to be effective

The placenta prevents many (but not all) dangerous substances from reaching the fetus.

What are the sources of these teratogens come from?

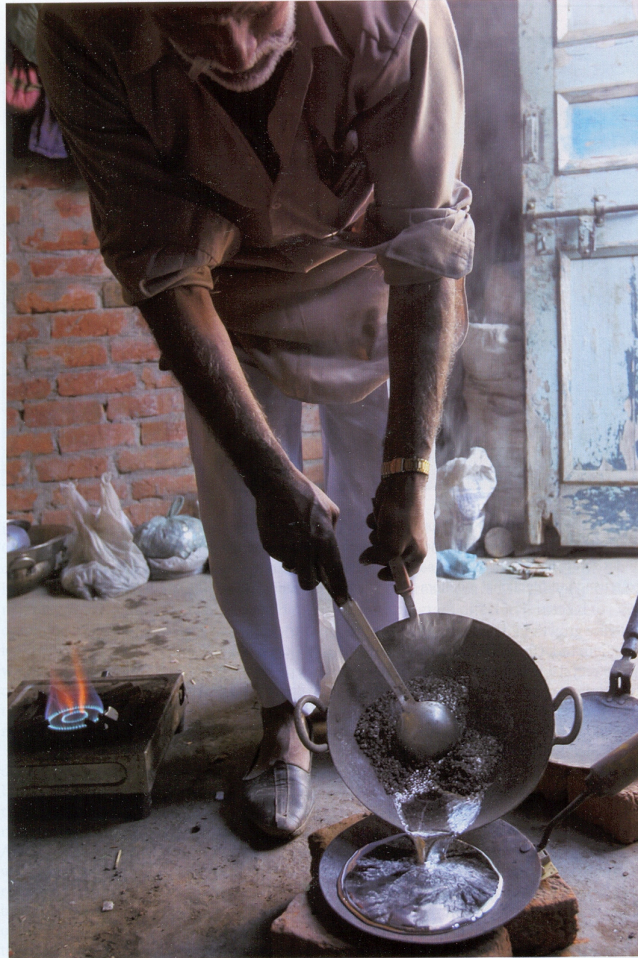


<http://ngm.nationalgeographic.com/2008/01/high-tech-trash/essick-photography>



DUMPED A farmer in rural Taizhou, China, readsies sweet potatoes for market beside circuit boards burned so metals could be extracted. The region has long been a major dump site for e-waste, but a crackdown by authorities has reduced illegal trade.

<http://ngm.nationalgeographic.com/2008/01/high-tech-trash/essick-photography>



TOXIC MELT In a poor suburb of New Delhi, India, where informal e-waste processing is a common household business, a man pours molten lead smelted from circuit boards. His family uses the same pots for cooking—a potentially deadly practice.

<http://ngm.nationalgeographic.com/2008/01/high-tech-trash/essick-photography>