

# EarlyCLOTHES

## Early-life exposure to chemical substances through textile materials: Health risk assessment

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### ▪ Background

**Textile dyes** and some other **textile-related substances** can cause **allergic skin reactions**. Furthermore, **cancer** has been associated to the exposure to **carcinogenic aryl amines** contained in clothes, as well as to the dermal absorption of other carcinogenic substances, such as **trace elements** and **formaldehyde**. Moreover, textile materials may also contain traces of **endocrine disruptor chemicals**, such as **bisphenol A** and **dioxin-like chemicals**. Dietary intake and air inhalation seem to be the most important exposure pathways for many chemicals. However, the contribution of **dermal absorption** as a route of exposure should not be disregarded, as it could be very important for some selected subpopulation groups. Since people are continuously exposed to chemicals contained in clothes, eventually this contribution could be especially relevant.

### ▪ Goal

The main objective of EarlyCLOTHES is to assess the **human health risks associated to the early-life exposure to chemicals contained in textile products**. Samples of clothes usually worn by pregnant women, newborns and children aged <3 years will be collected, and the levels of a wide range of chemicals will be determined. Specific samples of eco-friendly clothing will be considered. The individual exposure to each one of these substances and the combined exposure will be assessed for the same three sensitive groups of population. Moreover, because of the generalized lack of data concerning the dermal absorption of chemicals through textiles, a dermal bioaccessibility study will be also performed.

### ▪ Expected impact

Textile dyes, finish resins and some other textile-related substances can cause allergic skin reactions, while cancer has been associated with exposure to carcinogenic products contained in clothing. Unfortunately, information concerning the human exposure to these substances is very limited, and data about concentrations of sensitizing and irritating chemical substances used and remaining on the finished textile article is lacking. In parallel, there has been a growing demand on natural products in the market, including *eco-friendly* green products. Unsurprisingly, newborns and children present a higher prevalence than adults. The project will be focused on gathering very important **data on the dermal exposure to chemical mixtures contained in clothes**, especially for **sensitive groups of population**.

