



EU-OSHA Report **Findings and recommendations (II)**

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**Workplace risks to reproductivity:
from knowledge to action**

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State of the art report reproductive toxicants

The European Agency for Safety and Health at Work – EU-OSHA has commissioned a state-of-the-art report covering reprotoxicity and workplace exposures.

First recommendations for policy, research, monitoring and practice. Identification of gaps, proposals, on how they could be filled. Indications for further EU-OSHA activities, incl. research & prevention.

The report was established by researchers from Kooperationsstelle Hamburg IFE, Germany, Det Nationale Forskningscenter for Arbejdsmiljø, Denmark, Centralny Instytut Ochrony Pracy - Państwowy Instytut Badawczy, Poland. It was cross-checked by NMH, Hungary. Project manager at EU-OSHA was Dr. Elke Schneider. The report was completed in 2013

Overview

Part II, main findings and recommendations concerning:

- Endocrine disrupting compounds, EDCs
- Biological factors
- Physical factors
- Psychosocial factors
- Combined exposures
- Legal aspects
- Policy and prevention aspects

Endocrine disrupting compounds (EDCs)

Main findings:

Increasing evidence that EDCs are of concern in the occupational setting.

Many sectors could be affected (e.g. agriculture, plastics, waste management, maintenance, cleaning)

Recommendations:

Given the many often delayed and irreversible effects, there is urgent need to point out which substances and mixtures should be banned, which should be restricted, and how.

Job exposure matrices could be used to identify areas of concern needing further attention.

JEM

In 2009, Brouwers and colleagues developed a job exposure matrix, first established by van Tongeren et al. in 2002.

Used to estimate the exposure to potential EDCs in several job-categories in order to assist epidemiological research in identifying professions of concern (Brouwers et al., 2009)

Chemicals with endocrine disrupting properties (varying levels of evidence) were identified from the literature and classified into 10 chemical groups and further subgroups. Three experts scored the probability of exposure to each chemical group and subgroup for 353 job titles as “unlikely”, “possible” or “probable”, referring to the probability that the occupational exposure level would exceed the normal background level.

Jobs with high probability scores were provided with exposure scenarios that described the reasoning behind the scores

JEM

It turned out that exposure to any chemical group was unlikely for 238 professions (67%), whereas 102 (29%) professions were classified as possibly (17%) or probably (12%) exposed to one or several endocrine disruptors. The remaining 13 professions did not provide enough information to classify exposure.

The exposed job titles were predominantly skilled trades and process, plant and machine operatives.

PAHs, pesticides, phthalates, organic solvents, alkylphenolic compounds and metals were often linked to a job title in the JEM.

No studies have been performed regarding the validity of this matrix. According to Brouwers and colleagues, such a study is greatly needed, but would imply the collection and analysis of blood samples from potentially exposed workers and a reference population.

Biological factors

Main findings and recommendations:

The hazard of biological agents in health care has long been recognized and studied. It is, however, necessary to link known biological risks to workplaces and activities, and to integrate this knowledge into prevention measures, especially for pregnant women.

More guidelines are needed for pregnant women in other at-risk professions (e.g. meat processing industry, agriculture industry).

Little is known about the effect of biological agents at workplaces on male fertility and reproduction. Further research is needed into this, and it is necessary to raise awareness, and respect the fact that male reproduction may also be impaired by biological agents.

Physical factors

Main findings:

Research has been conducted on ionising radiation, electric shock, electromagnetic fields, heat, cold, noise, ultrasound, vibration, working hours and shifts, ergonomic exposure.

Most research focusses on pregnant women. Outcomes showing reasons for concern but also uncertainty. Proposed measures mainly concern pregnant women.

Recommendations:

More research (males, females) and specific prevention measures are needed.

A comprehensive reproductive risk assessment should already be performed during the preconception period

Psychosocial factors

Main findings:

Many studies apply unclear measures of stress and periods of exposure, and collect information after the children are born (increased risk of bias). Most investigated endpoints are relatively close to pregnancy, e.g. abortion, preterm birth and fetal growth. May not be the most sensitive endpoints.

Recommendations:

More research needed; selection of sensitive endpoints (nervous system function of the child).

Improvement of the psychosocial situation in companies is urgently needed and should also specifically address the situation of pregnant women. A legal approach should be considered.

Combined exposures

Main findings:

Some research has been done covering solvents, disinfectants, pesticides, and EDCs mixtures, stress and chemicals, chemicals and prolonged sitting.

Much more research needed.

Recommendations:

Researchers conclude that 'interpreting available information on additive and synergistic effects of exposures remains a challenge for employers, especially small businesses' (Lawson et al., 2006). Where there are some OELs in place, mixture effects can be considered, e.g. Danish and German examples. However, where the scientific data do not yet allow defining OELs, a precautionary approach needs to be applied and OSH research should provide respective approaches.

Legal aspects

Main findings:

Directive 92/85 EEC (pregnant workers etc) a model in considering all factors and agents. However, there is an “early pregnancy gap” left.

Recommendations:

It is important to review the legislation to ensure equal protection for women and men, including those who plan to posterity, as well as the inclusion of new hazards into law (such as nanomaterial, EDCs).

However, focus should be put on a comprehensive risk assessment that covers both sexes, all developmental stages, long term effects, and all risk factors (including physical, biological, and psychosocial factors). The precautionary approach has to be highlighted.

OEL – DNEL problem to be addressed.

Policies



Main findings:

Lack of awareness, knowledge on reproductive and developmental toxicity very poor.



Recommendations:

Research to be increased

Awareness raising measures urgently needed (preferably tripartite approaches)



More guidelines and help for companies (including what to do in case of data gaps, unclear results etc.)

Prevention

Main findings:

Some efforts have been done e.g. health sector guideline, substitution portal, etc.).

Pregnant women fairly well covered but for female and male workers in their reproductive age a lot remains to be done, especially when looking at the full range of reprotoxic factors (chemical, physical, psychosocial, biological, ECDs, nano etc).

Recommendations:

Risk assessment help offered to companies should be sector specific, covering all factors, and males and females of reproductive ages and it should also include early gestation - where the woman may not yet know that she is pregnant, as well as expectant and breast feeding mothers. The measures should be based on the precautionary principle, where sufficient data are not yet available.

Thanks

■ Thank you for your attention
and contributions!