

Advisory Committee on Toxic Substances Paper		ACTS/13 /2010	
Meeting date:	11 November 2010	Open Govt. Status:	Open
Type of paper:	Above the line	File Ref:	2010/492586
Exemptions:	None		

ADVISORY COMMITTEE ON TOXIC SUBSTANCES

HSL Submissions to HSE 2011 Science Plan

Research Project Idea Form

Occupational exposure to reproductive hazards

Programme/Project Title:	Occupational exposure to reproductive hazards
Name of HSL person to Contact for further information:	John Cocker

Objective(s) & why it links to the HSE Strategy

The overall goal of this programme is to minimize occupational risks to reproductive health. The objectives will be to identify substances potentially toxic to reproductive health, to assess exposure at selected sites, and to assess whether there is any evidence of toxic effects on reproductive health.

The study links directly to HSE's mission to prevent death, injury and ill health in Great Britain's workplaces and specifically objective 1: To identify and prioritise significant health and safety problem areas for workers and those affected by work activities.

Brief Summary of Research that will be undertaken

Reproductive ill-health has many aspects and causes but one is occupational exposure to hazardous chemicals in the workplace. Chemicals that may have impacts on reproductive health carry risk phrases like R46 'May cause hereditary genetic damage', R60 'May impair fertility', R61 'May cause harm to the unborn child', R62 'Possible risk of impaired fertility', R63 'Possible risk of harm to the unborn child'. Pharmaceuticals like cytotoxic drugs and anesthetic gases may not be so labeled. Examples of substances with reported reproductive effects are still in regular use, but there are many others with suspected reproductive effects but for which there are insufficient data. Much of the data relating to reproductive health has been gathered in women; there is a dearth of information on the associations between occupational exposure to potentially repro-toxic substances and male reproductive health.

It is proposed that this programme is undertaken in two phases. During the first phase, exploratory investigations will be undertaken for selected repro-toxic substances. The second phase will be informed by the findings in the first phase, and will investigate in greater detail any areas of concern highlighted during the first phase.

It is unclear how many people may be exposed to such substances or their level of exposure and its consequences. The first stage aims to assess potential exposure by compiling a list of chemicals carrying such R phrases and prioritising them for investigations of workplace exposure based on expert (HSE) judgments of their use, numbers of people exposed, and potential for exposure, and whether there is any evidence of repro-toxicity at the observed levels of exposure. Many of these substances may be carcinogens and mutagens and the exposure controls for these aspects should keep the exposure low but does this happen in practice? For those substances where the lead health effect is an aspect of reproductive health how well controlled are the exposures?

Elements of the first phase are:

- 1) Literature work to generate a list of repro-toxic substances
- 2) Meetings with HSE to gather views on priority substances
- 3) Desk research on what substances are used for which process, where exposure may occur and how many people are potentially exposed
- 4) Meetings with HSE and trade associations to arrange workplace visits to assess exposure
- 5) Site visits (2 – 5) per substance to assess exposure, controls and compliance with good occupational hygiene practice and produce field visit reports (output). For workers willing to participate at the sites, biomarkers of exposure, if available, will be measured, and brief occupational histories and other potentially important confounding variables recorded.
- 6) Data analysis and report writing

A break-point is planned at the end of the first, exploratory phase of the programme. Findings will be reviewed within the project team and with HSE, and the second phase will be planned in the light of these findings. Substances or areas of concern will be followed-up with more detailed investigations of exposure, controls and reproductive health effects, and if appropriate, interventions to reduce risks to reproductive health. A cohort study to investigate repro-toxic effects may be established if required, for example a cohort of health workers exposed to cytotoxic drugs, sterilants or anaesthetic gases. Such a cohort could also examine other occupational exposures, such as shift work, and other health outcomes, such as stress.

This is an interdisciplinary research programme, which makes the most of HSL's broad range of expertise. Staff from across HSL, including Analytical Sciences, Mathematical Sciences, Occupational Hygiene, Work Psychology & Ergonomics Units and the Centre for Workplace Health, would be involved. There is scope for collaboration with external partners, for example the MRC Environmental Epidemiology Resource Centre in Southampton, academic reproductive health specialist, etc.

What will the programme / project deliver to HSE?

The project will produce field visit reports, information and data on exposure to reproductive hazards and associated measures of reproductive toxicity among exposed workers to inform policy and enforcement decisions e.g. whether interventions and/or further investigations are required.

Benefits to HSE and the UK H&S System (State, where possible, which part of HSE will benefit e.g. FOD, HID etc)

The benefits to HSE are a scientific base for policy and enforcement decisions.

Outline Time and Cost (probably best to give a range e.g. £xK - £yK, 15-18 months)

Outline Costs:	£120k - £150k + biomarkers etc for first phase
Outline Time:	12 – 18 months