

inappropriate choice of risk estimates, imprecision in the risk estimates and estimates of proportions exposed, inaccurate risk exposure period and latency assumptions and a lack of separate risk estimates in some cases for women and/or cancer incidence. However, the results form a robust basis on which to carry out a socio-economic comparison of the health benefits and costs of compliance.

192 **MINISYMPOSIUM OF THE SHECAN PROJECT - METHODOLOGY FOR THE SOCIO-ECONOMIC ASSESSMENT: A USEFUL WAY TO ASSESS PRIORITIES?**

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Objectives To assess potential compliance costs and socio-economic benefits of potential future changes to the Carcinogens Directive for 25 substances.

Methods Drawing upon estimates of occupational exposure and health impact assessment, economic impacts of exposure due to disability and death were estimated under a 'do nothing' scenario. The value of disability and deaths avoided through possible reduced workplace concentrations were estimated based on value of life years lost, cost of illness and willingness to pay to avoid cancer.

Compliance costs of meeting possible amendments to the directive (stricter occupational exposure limits) based on the likely risk management measures needed in the workplace, were estimated for each relevant industry sector. This allowed key costs and benefits to be compared.

Results It was possible to quantitatively estimate both compliance costs and benefits in terms of reduced cancer impacts for around half of the 25 substances. These, along with other socio-economic indicators of the potential impacts of further controlling workplace exposure were presented in a form intended to be compatible with an EU "Impact Assessment", which is required for any major new change in policy.

There are substantial uncertainties in any assessment such as this, including in approaches and data for valuing health impacts; numbers of people/firms affected; compliance methods and associated costs; amongst others.

Conclusions Assigning monetary values to the avoidance of cancer (and other health and environmental impacts) remains a controversial area. Nonetheless, the data developed during this study at least provide indications of the relative merits of targeting certain substances over others for possible future workplace exposure limits, based on a comparison of cancer avoided (and associated socio-economic benefit) with the compliance costs for affected industry. Given the large methodological uncertainties involved, the results are of most use in cases where the difference between costs and benefits is most pronounced.

193 **SHECAN - PRIORITISING ACTION ON OCCUPATIONAL CARCINOGENS IN EUROPE**

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Introduction In Europe the main legislation to ensure control of occupational carcinogens is Directive 2004/37/EC on the Protection of Workers from the Risks Related to Exposure to Carcinogens or Mutagens at Work. The EC DG Employment sponsored a socioeconomic, health and environmental analysis of possible changes to the Directive. This paper provides the background to the project and a broad overview of results.

Methods The project involved collecting available information about the circumstances of exposure for 25 substances. These data were used to assess the exposures, which in turn provided the basis for assessing the cancer burden from past and future use. Health costs and benefits were evaluated for no intervention and for the introduction of up to three possible Occupational Exposure Limits (OELs). Compliance costs were separately estimated.

Results Eleven of the substances were human carcinogens, four were probably carcinogenic and ten were possible human carcinogens. For six substances, there are more than a million workers in the EU currently exposed and for six substances there are less than 10,000 exposed. If there is no action, it was estimated there would be more than attributable 700,000 cancer deaths over the next 60-years. However, there were only seven substances-OEL combinations where there was a substantial health benefit from introducing or reducing an OEL at the levels assessed. In general, total compliance costs were greater than monetized health benefits, mainly because of the delay in accruing benefits because of latency and the monetary value of these benefits being discounted in the calculation.

Discussion The strongest cases for the introduction of an OEL are for: RCS, chrome VI and hardwood dust. Other substances where the weight of evidence supports the introduction of a limit include: diesel engine exhaust emissions, rubber fume, benzo[a]pyrene, trichloroethylene, hydrazine, epichlorohydrin, o-toluidine, used engine oil and MDA.

194 **SHECAN - HEALTH AND SOCIO-ECONOMIC IMPACTS FOR CHANGES TO THE CARCINOGEN DIRECTIVE FOR SOME PROCESS GENERATED SUBSTANCES**

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Objectives To determine the health and economic impacts of introducing some process generated substances in the Carcinogen Directive.

Methods Health and economic impacts were estimated for introducing new OELs (diesel engine exhaust-DEE, silica, and rubber dust and fumes) or for applying best practice (mineral oils). Avoidable cancer cases and deaths were estimated for the year 2060, and monetized health benefit and cost for controlling exposure were compared.

Results The estimated health impact and associated cost for introducing a OEL for DEE100 mg EC/m³ was insignificant as, apart from in underground mines, only a small percentage of the EU workforce is currently exposed to higher levels. For silica, the impact of introducing new OELs of 0.05, 0.1 and 0.2 mg/m³ was estimated. The number of lung cancer deaths avoided was approximately 5300, 4900 and 4000, respectively. Associated net monetized health benefit was €28–74bn, €26–68bn and €21–56bn, respectively. Estimated cost for