1. Prioritisation of carcinogens for further information gathering

The occupational carcinogens covered by this aspect of the project are those classified in the EU as category 1 or 2 carcinogens, those classified by IARC in group 1 or 2a, and those additionally named as carcinogens in Schedule 1 of the Control of Substances Hazardous to Health (COSHH) Regulations.

In the context of this project, only those carcinogens to which there is occupational exposure in the UK are of concern.

This work is ongoing. Positions of individual carcinogens within the different groupings may change as more information is gathered.

(a). Carcinogens of high priority for in depth hygiene assessment

These are carcinogens for which there is sufficient evidence based on a preliminary review of potency, numbers of workers exposed and/or the control of occupational exposure to indicate a need for more in depth assessment, including survey-type work. Detailed hygiene assessments will be undertaken to better understand the use and control of these carcinogens and inform the setting of priorities for future intervention activity.

- Aromatic amines:
  - 4,4-Methylene bis(2-chloraniline)[MbOCA]
  - Methylene dianiline [MDA]
  - 4,4’-Methylene-di-o-toluidine
- Beryllium and compounds
- Chromium and compounds (excluding lead chromate)
- Ferrous foundry particulate
- Hydrazine, including:
  - 1,2-Dimethyl hydrazine
  - Salts of hydrazine (sulphate, nitrate, perchlorate, phenyl hydrazine and 1,2-diphenyl hydrazine)
- Nickel and compounds
- Polycyclic aromatic hydrocarbons, including:
  - Coal soot
  - Coal tar [and coal tar products]
  - Pitch
  - Coal tar fumes
  - Chrysene
- Rubber fume/rubber process dust
- Sulphuric acid mist

(b). Carcinogens that may be a high priority for in depth hygiene assessment – further preliminary evaluation & sifting required

This list includes carcinogens that may be of concern and further information is required about their use in the UK to establish if we need to include them in the survey-type work and develop more detailed workplace profiles. The basis of their inclusion is either high potency or limited/unclear evidence to suggest widespread use and/or poor control in the workplace.

- Acrylonitrile
- Auramine manufacture
- Bis(chloromethyl)ether [BCME]
- Benzene
- Butadiene
- Chlorodimethyl ether
- CI direct dyes (black, blue, red, disperse blue, violet/ Benzidine azo-dyes
- Diazomethane
- 3,3-Dichlorobenzidine and salts
- Diethyl sulphate
- 3,3’-Dimethylbenzidine
- Dimethylcarbamoyl chloride
- Dimethylsulphamoyl chloride
- Dimethyl sulphate
- 3,5-Dinitrotoluene
- 3,4-Dinitrotoluene
- 2,5-Dinitrotoluene
- 2,3-Dinitrotoluene
- 2,4-Dinitrotoluene
- 2,6-Dinitrotoluene
- Epichlorhydrin
- Ethylene dibromide
- Ethyleneimine
- Glycidol
- Indium phosphide
- Leather dust in shoe manufacture
- Magenta manufacture
- 1-Methyl-3-nitro-1-nitroso-guanidine
- Michlers ketone
- 2-Nitropropane
- Nitrosamines – including dimethylnitrosamine (N-nitrosodimethylamine), Nitrosodipropylamine, N-nitrosodiethanolamine
- Plastic process fume
- 1,3-Propane sultone
- 3-Propanolide
- Refractory ceramic fibres
- Styrene oxide
- Thioacetamide
- 2,3,4-Trichloro-1-butene
- 1,2,3-Trichloropropane
- Urethane
- Vinyl bromide
- Vinyl fluoride

(c). Carcinogens for which preliminary information is still being gathered.

Work is ongoing to establish which evidence-gathering priority group these carcinogens should belong to.

- Arsenic and compounds, including:
  - Arsenic acid and its salts
  - Arsenic pentoxide
  - Arsenic trioxide
  - Diarsine trioxide
- Cobalt metal with tungsten carbide
- 3,3’-Diaminobenzidine
- 2,3-Epoxypropyltrimethylammonium chloride [EPTAC]
- Formaldehyde
- Gallium arsenide (being considered with Arsenic and compounds)
- Petroleum substances (inc lubrication oils, low boiling point naphtha, petroleum gas, refinery gas, used engine oils etc.)
- Phenolphthalein
- 4,4’-Thiodianiline and its salts
- Quinoline

(d). Carcinogens of low priority – no further evidence to be gathered

These are low priority carcinogens for which HSE views the available information on use and control in the UK as adequate for decision-making about future intervention activities. They
will not be pursued further, unless other evidence comes to light to suggest that we need to look at them again.

- **Acrylamide:**
  - Acrylamidomethoxyacetate (containing ≥ 0.1% acrylamide)
  - Methylacrylamidoglycolate (containing ≥ 0.1% acrylamide)
- **4-Aminoazobenzene**
- **4-Aminobiphenyl inc. salts**
- **5-Allyl-1,3-benzodioxole [ safrole]**
- **3-Amino-9-ethylcarbazole**
- **4-Amino-3-fluorophenol**
- o-Anisidine
- **Azobenzene**
- o-Aminoazotoluene [4-o-tolylazo-o-toluidine]
- Benzyl chloride [α chlorotoluene]
- Benzidine and compounds
- **Butane [1], isobutene [2], (containing ≥ 0.1% butadiene) [liquid petroleum gas]**
- Cadmium and cadmium compounds
- **4-Chloroaniline**
- **4-Chloro-o-toluidine**
- p-Cresidine [6-methoxy-m-toluidine]
- Calcining, sintering or smelting of nickel copper matte or acid leaching or electrofining of roasted matte
- 2,4-Diaminoanisole [4-methoxy-m-phenylenediamine] and sulphate
- o-Dianisidine including salt and o-dianisidine bases azodyes
- **1,2,3,4 Diepoxybutane**
- 1,2-Dibromo-3-chloropropane
- 1,3-Dichloro-2-propanol
- Dioxins (inc.polychlorodibenzodioxins and polychlorodibenzofurans)
- Diesel engine exhaust emissions
- **1,2, -Epoxypropane [propylene oxide]**
- Erionite
- Ethylene dichloride [1,2-dichloroethane]
- Ethylene oxide
- **Hexachlorobenzene**
- Hexamethylphosphoric triamide
- Hydrazine bis [3-carboxy-4-hydroxybenzene sulphonate]
- Hydrazine-tri-nitromethane
- Isobutyl nitrite
- Isoprene
- Lead chromate
- 2-Methylaziridine
- 4-Methyl-m-hexylenediamine
- Methyl 2-methoxyaniline
- 4-Methyl-m-phenylenediamine and its sulphate salt [2,4-toluenediamine] [Diaminotoluene]
- Methyl-ONN-azoxymethyl acetate [Methyl azoxy methyl acetate]
- Mustard gas
- 2-Naphthylamine inc. salts of 2-naphthylamine
- 5-Nitroacenaphthene
- 2-Nitroanisole
- 2-Nitronaphthalene
- 4-Nitrobiphenyl [4-nitrodiphenyl]
- 2-Nitrotoluene
- (S)-Oxiranemethanol [4-methylbenzene-sulfonate]
- 4,4’-Oxydianiline and its salts
- Phenyl glycidyl ether
- Potassium bromate
- N,N,N’,N’-Tetramethyl-4,4’-methylenedianiline
- 2,4,5-Trimethylaniline
- o-Toluidine and compounds
- Trichloroethylene
- Vinyl chloride monomer

(e). **Substances under suspicion of carcinogenicity – currently under international review.**

The following substances are under review for carcinogenicity in the EU and / or by IARC. Depending upon the conclusions reached, they may become of interest to the HSE’s carcinogens programme.

- Tetrahydrofuran
- Carbon black

(f). **Carcinogens covered by a different strand of the Disease Reduction Programme and other strategic programmes.**

Other activities within the Disease Reduction Programme are addressing these carcinogens.

- Asbestos
- Crystalline silica
- Welding fume
- Wood dust

(g). Carcinogens not in scope of the Disease Reduction Programme

- Tobacco and passive smoking
- Dietary carcinogens
- Sunlight
- Ionising radiation (inc radon)
- Medicines and medical products
- Alcohol
- Natural hormones