Update from IARC

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International Agency for Research on Cancer

World Health Organization

Welding and occupational exposure to welding fumes, Vol 118

- IARC Monographs V118, 03/2017, welding fumes are *carcinogenic to humans* (Group 1), based on *sufficient evidence* for lung cancer
- Worldwide, an estimated 11 million workers have a job title of welder, and around 110 million additional workers probably incur welding-related exposures.
- Welding can involve exposures to fumes, gases, UV radiation and electromagnetic fields and co-exposures to asbestos and solvents
- Most case–control studies showed positive associations, with risks for ocular melanoma increased by between 2-fold and 10-fold
- Sufficient evidence for the carcinogenicity of UV radiation and ocular melanoma.

Welding and occupational exposure to welding fumes, Vol 118

- 20 case–control studies and ca. 30 cohort studies, reported increased risks of lung cancer in welders or other workers exposed to welding fumes.
- Exposure–response associations with indices of longer or greater cumulative exposure to welding fumes reported in several studies,
- Positive associations persisted after adjusting directly or indirectly for smoking, asbestos co-exposure, or both; restricting to non-smokers and in cohorts with low or minimal asbestos exposure.
- Positive associations for occupation as a welder and kidney cancer
- Strong evidence suggests that welding fumes induce chronic inflammation and are immunosuppressive.

Prevention of occupational cancer

- Guy Ryder, DG ILO
- Michel Servoz, Head, DG EMPLOI , EU
- Sergio Iavicoli, Secretary General, ICOH
- Pirkko Mattila, Minister of Social Affairs and Health, Finland
- Sam Tan, Minister of State, Prime Minister's Office, Singapore
- Sun Huashan, Vice Minister, State Administration of Work Safety, China
- Christa Sedlatschek, Director, EU OSHA; Kurt Straif, IARC

ICOH Mini-symposium on Prevention of occupational cancer

Moderators: Jukka Takala, Sergio Iavicoli, Jorma Rantanen

- Michel Servoz, France
- Pirkko Mattila, Finland
- Identification of occupational carcinogens. The IARC monographs as the basis for estimating the burden of occupational cancer.

WHO-ILO Estimating the burden of occupational diseases

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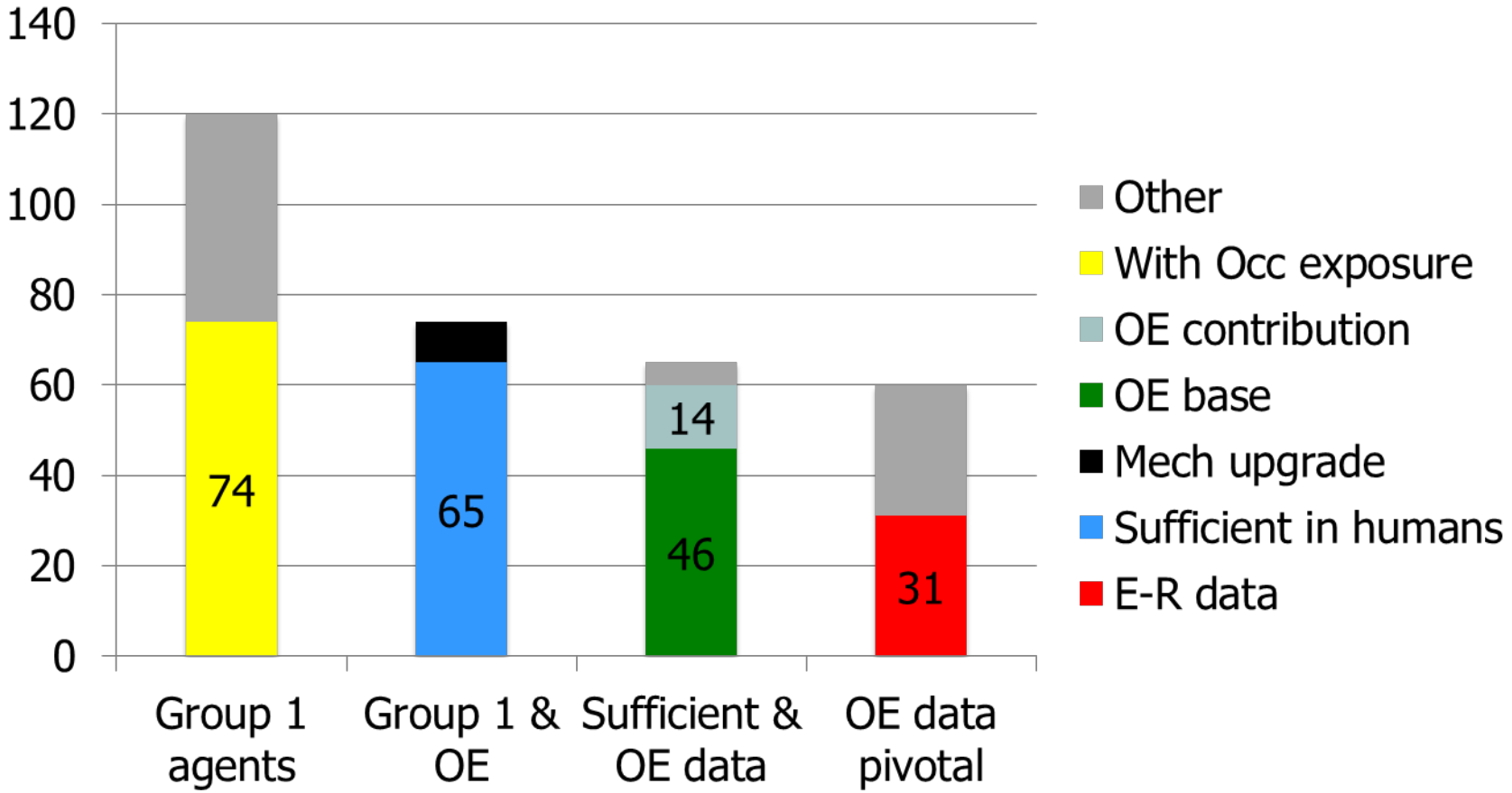
Pentachlorophenol, Vol 117

- Sufficient evidence of cancer in humans (Non-Hodgkin lymphoma)
- Sufficient evidence of cancer in animals;
- Strong evidence of multiple KC,
- metabolically activated to electrophilic benzoquinones and redox-cycling semiquinones,
- induces oxidative stress,
- is genotoxic,
- is anti-estrogenic, and
- alters cell signalling, apoptosis, and proliferation.
- Group 1 carcinogen

Epidemiologic data for occupational carcinogen identification and risk assessment



Pooled analyses of workers monitored for lead exposure

- Investigate whether inorganic lead is a carcinogen among adults
- 3 cohorts of lead-exposed workers with blood lead data (USA, Finland, UK), including > 88 000 workers and >14 000 deaths.
- Exposure metric was maximum blood lead

Table 4 Categorical and continuous results of mortality by blood lead category for selected cancers*

Cause	Number of deaths by lead category	Lead category, µg/dL	HR†	95% CI
Bladder cancer n=96	15	20 to <30	1.02	0.54 to 1.93
	14	30 to <40	1.40	0.71 to 2.76
	40	40+	1.86	1.04 to 3.33
Brain cancer (including benign) n=111	26	20 to <30	1.31	0.79 to 2.17
	14	30 to <40	1.05	0.55 to 1.99
	33	40+	1.42	0.83 to 2.43
Larynx cancer n=39	6	20 to <30	1.21	0.41 to 3.54
	4	30 to <40	0.97	0.28 to 3.35
	21	40+	2.69	1.07 to 6.76
Lung cancer n=1333	271	20 to <30	1.39	1.19 to 1.64
	214	30 to <40	1.54	1.29 to 1.84
	500	40+	1.78	1.51 to 2.08
Kidney cancer n=128	24	20 to <30	0.89	0.54 to 1.45
	9	30 to <40	0.50	0.24 to 1.03
	42	40+	1.21	0.74 to 1.97
Stomach cancer n=195	57	20 to <30	1.62	1.13 to 2.32
	18	30 to<40	0.84	0.49 to 1.44
	53	40+	1.09	0.70 to 1.67

Pooled analyses of workers monitored for lead exposure

- Investigate whether inorganic lead is a carcinogen among adults
- 3 cohorts of lead-exposed workers with blood lead data (USA, Finland, UK), including > 88 000 workers and >14 000 deaths.
- Exposure metric was maximum blood lead
- Strong positive mortality trends, with increasing BL level, for several outcomes in internal analysis.
- Many of these outcomes associated with smoking
- Small sub sample of US cohort (n=115)
  no association between smoking and maximum blood lead.
- Borderline trend for brain cancer, not associated with smoking.

Exposure to asbestos and cholangiocarcinoma

- Case-control study nested in the Nordic Occupational Cancer (NOCCA) cohort.
- 1,458 intrahepatic CC (ICC) and 3,972 extrahepatic (ECC) cases
- Each case individually matched by birth year, gender, and country to 5 population controls.
- Cumulative exposure to asbestos by applying NOCCA job exposure matrix to censuses data on occupation (conducted in 1960, 1970, 1980/81, and 1990).
- Exposure-response trend for ICC
  No association between asbestos exposure and ECC

Cumulative exposure to asbestos and risk of intrahepatic cholangiocarcinoma. Logistic regression (matching variables: year of birth, gender, country) adjusted by printing industry work

Lag period	Cases N=1,458	Controls N=6,773	OR	(95%CI)[a]	P trend	BIC
No lag					0.004	5036.3
0 f/ml * years	1,171	5,548	1.0	(Ref.)		
0.1–1.1 f/ml * years	144	641	1.2	(1.0–1.4)		
1.2–14.9 f/ml * years	109	480	1.2	(1.0–1.5)		
≥15.0 f/ml * years	34	104	1.7	(1.1–2.6)		
20-year lag					0.003	5035.4
0 f/ml * years	1,196	5,663	1.0	(Ref.)		
0.1–1.1 f/ml * years	133	586	1.2	(1.0–1.5)		
1.2–14.9 f/ml * years	110	477	1.2	(1.0–1.5)		
≥15.0 f/ml * years	19	47	2.1	(1.2–3.7)		