Objectives Recent analyses of long-term trends in respirable dust and quartz concentrations from the long term monitoring program of the European Industrial Minerals Association (IMA-Europe) Dust Monitoring Program (covering the years 2000–2013) showed striking downward temporal trends in exposure which came to a halt around the year 2009. Careful analyses and discussion with occupational health and safety representatives pointed at a direct detrimental effect of the current economic crisis on measured concentrations. This observation led us to hypothesise that similar disruptions of downward temporal trends in occupational exposures might also be visible in other large databases with longitudinal exposure measurements.

Method Temporal time trends were estimated in two additional databases (ExpoSYN and URALASBEST) each covering more than 50 years of occupational exposure monitoring. More flexible spline analyses rather than standard log linear (multiplicative) models were used to look for reversed trends.

Results In all three databases macro-economic and political developments seemed to influence downward trends in occupational exposure concentrations. Effects of economic crises like those of the early 1980s, early 1990s and the most recent one as well as the period of political and economic reform in Russia were clearly visible as reduced downward or even reversed temporal trends in occupational exposure concentrations.

Conclusions In exposure assessment for occupational epidemiological studies long term exposures are often modelled as log linear trends. Approaches allowing for disruptions of these trends by macro-economic and/or political developments are needed for more accurate and precise estimations of long-term exposure and will result in more reliable quantitative risk estimates.

Objectives To create a general population job-exposure matrix (JEM) from a database of expert assessments performed during four community-based case-control studies of cancer (lung, breast, brain, and multisite) conducted in Montreal since the 1980s.

Method The expert assessments were performed by the same team of chemists, who assigned exposure to a predefined list of agents to each job held by subjects based on job histories and descriptions of tasks and work environment obtained through interview. The estimated metrics include measures of intensity, frequency and likelihood of exposure. The JEM dimensions include agent, occupation (Canadian, U.S., and international classifications) and era. For each cell, probability of exposure was computed as the proportion of individual jobs exposed. Among the exposed within a cell, CANJEM provides median frequency of exposure, the mode of exposure intensity categories and median time weighted intensity.

Results CANJEM includes information from 6222 men and 2563 women, totalling 31 780 individual jobs held between 1921 and 2005, representing approximately 50 expert-years of exposure assessment. Well known agents among the most frequently encountered include carbon monoxide (22% of individual jobs exposed), organic solvents (17.5%), and formaldehyde (10.6%). The JEM covers 303 occupations, 280 agents, and 4 eras (<1950, 1950–1969, 1970–1984, >1984). Overall, 20% of the cells have a non-null proportion of jobs exposed, 12% with a proportion greater than 5%.

Conclusions CANJEM constitutes one of the largest current sources of retrospective occupational exposure information in North America, usable to support exposure assessment efforts in epidemiology and estimate populations of workers exposed to harmful agents.