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CANCER MORTALITY AMONG ELECTROLYSIS WORKERS: WHERE HAVE ALL THE CANCERS GONE? A CHALLENGE TO OCCUPATIONAL EPIDEMIOLOGISTS AND REGULATORY BOARDSTom Grimsrud, Aage Andersen *Cancer Registry of Norway, Oslo, Norway*

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Objectives The alleged absence of increased cancer mortality among electrolysis workers at the Port Colborne refinery (Canada) contrasts the excess incidence of lung cancer and nasal cancer seen among workers engaged in electrolytic production of nickel and copper at the Kristiansand refinery (Norway) and the Harjavalta nickel refinery (Finland). The latter hazards have been ascribed to soluble nickel compounds.

Methods Epidemiological reports and published papers issued 1959–1992 from Port Colborne were reviewed.

Results In 1977, the U.S. National Institute of Occupational Safety and Health (NIOSH) reported 80 lung cancer deaths and 27 nasal cancer deaths (1950–1976) among long-term workers (5 years or more) from Port Colborne furnace and electrolysis departments. In a new enlarged cohort – subsequently established by the company – some 25% of the old workers and relevant respiratory cancer deaths seemed to disappear. The nasal cancer mortality never exceeded 19 deaths despite another 8 years of follow-up. By the end of the last update (1950–1984), 42% of Port Colborne workers had unknown vital status but were taken to be alive throughout the observation period, thereby inflating the expected numbers of deaths.

Conclusions Exclusion of long-term workers from the cohort, a general loss of deaths in the linkage procedure, and artificially high expected numbers all contribute to a downward bias in the observed-to-expected mortality ratios. Epidemiological papers after 1980 and reviews relying on Port Colborne workers may have flaws in the data that seriously question the reliability of the risk estimates. Some regulatory decisions may need to be reconsidered.