Pesticides, nickel exposure and retirement planning

An American cross-sectional study investigated associations between organochlorine use and risk of hypothyroidism and hyperthyroidism among female spouses of pesticide applicators (n = 16 529) enrolled in the Agricultural Health Study in 1993–97 [1]. They assessed risk of thyroid disease in relation to use of herbicides, insecticides, fungicides and fumigants. Prevalence of self-reported clinically diagnosed thyroid disease was 12.5% and hypothyroidism and hyperthyroidism was 6.9% and 2.1%, respectively. Ever use of organochlorine insecticides was associated with an increased odds of hypothyroidism [adjusted odds ratio (ORadj) = 1.2 (95% CI: 1.0–1.6)] and fungicides [ORadj = 1.4 (95% CI: 1.1–1.8)] but not with use of herbicides, fumigants, organophosphates, pyrethrinds or carbamates. Specifically, use of chlordane [ORadj = 1.3 (95% CI: 0.99–1.7)], the fungicides benomyl [ORadj = 3.1 (95% CI: 1.9–5.1)] and maneb/mancozeb [ORadj = 2.2 (95% CI: 1.5–3.3)] and the herbicide paraquat [ORadj = 1.8 (95% CI: 1.1–2.8)] was significantly associated with hypothyroidism. Maneb/mancozeb was associated with both hyperthyroidism [ORadj = 2.3 (95% CI: 1.2–4.4)] and hypothyroidism. Self-reported thyroid disease in spouses of pesticide applicators was 12.5%, higher than in the general population. Hypothyroidism was most commonly associated with the use of benomyl, maneb/mancozeb and paraquat in addition to the organochlorines aldrin, dichlorodiphenyltrichloroethane, heptachlor, lindane and chlordane. Maneb/mancozeb was also associated with hyperthyroidism. Further studies are needed to confirm these findings and to evaluate mechanisms of action.

Industrial exposures to nickel and nickel compounds by inhalation, ingestion and skin contact may occur in production plants making metallic nickel, nickel compounds and nickel alloys as well as downstream use such as battery manufacturing and electroplating operations. Consumer exposure to nickel can occur through contact with jewellery, buttons and body piercing materials. A recent study measured baseline dermal exposure levels for predefined processes/tasks for main production processes and end-user applications with potential for dermal nickel exposure within five primary nickel production and primary nickel user industries [2]. Dermal samples using moist wipes recovered surface contamination from defined areas of skin and they measured the levels of nickel contamination of workers involved in specific processes and tasks. Samples were analysed for soluble and insoluble nickel species. Personal samples of inhalable dust were also collected to determine the corresponding inhalable nickel exposures. The air samples were analysed for total inhalable dust and then for soluble, sulphidic, metallic and oxidic nickel species. A statistically significant correlation was observed between dermal exposures for all anatomical areas across all tasks. Also the dermal and inhalable (total) nickel exposures were similarly associated. Overall, dermal exposures to nickel, nickel compounds and nickel alloys were relatively low. Exposures were highly variable, which can be explained by the inconsistent use of protective equipment, varying working practices and different standards of automation and engineering controls within each exposure category.

Virtually, all Western countries are seeking to bring retirement ages more in line with increases in longevity. A Dutch study investigated whether individuals plan their retirement age commensurate with their life expectancy or expectations of survival [3]. Using data on retirement behaviour (N = 1621 employees aged 50–60 years), regression and survival models were estimated to examine the effect of subjective life expectancy on retirement planning and behaviour. The results indicated that those employees with greater subjective life expectancy had a preference for later retirement but did not often succeed in carrying their intentions into effect.

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References