

EPIDEMIOLOGY

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To the Epidemiology session, 19 papers were contributed from Norway 1, Sweden 2, Russia 2, Taiwan 1, Japan 3, United States 9, and Australia 1,

In the 19 papers, various **cohorts (Boldface)** were surveyed and investigated for conjecturing *possible health effects (Italics)*. 1) **Norwegian women** for *fish consumption and birthweight*. 2) **Swedish fishermen** for exposure to *PCB and DDE and sperm chromatin integrity*. 3) **Swedish women** for *endometrial cancer and endocrine disruptors*. 4) **Russian workers** at a chemical factory for *sex ratio* in second and third generations. 5) **Adolescent boys** in Chapaevsk for consumption of *local foods and serum dioxin levels*. 6) **Russian Women** who use pork from Chapaevsk farm for *genital and maturational abnormalities*. 7) **Pregnant women in Central Taiwan** for the ratio of *4-OH-E2/2-OH-E2 decreased with increasing tertiles of 2,3,7,8-TCDD*. 8) **Japanese male and female infants** for *lymphocyte subsets and thyroid related chemicals*. 9) **Japanese male and female infants** of 10 months of age, for perinatal exposure to *POPs and the total developmental condition*. 10) **Mother-infant pairs in Sendai**, Japan for levels of *thyroid hormones and neonatal neurobehavioral status*. 11) **Women residing near Seveso** for *TCDD and age of onset of menopause*. 12) **Women who were premenarcheal** in 1976, at the time of explosion in Seveso, for association of *individual TCDD and age of menarche*. 13) **Women in West Virginia** for association of *dioxin and endometriosis*. 14) **Women diagnosed invasive and benign cancer in California** for levels of *PCDD/Fs and pesticides*. 15), 16) and 17) **Vietnam Ranch Hand veterans** for *metabolic syndromes and mortality, TCDD insulin sensitivity, and risk of death caused by the circulatory system*. 18) **Comparison veterans** who did not spray herbicide for the *risk of cancer at all sites*. 19) **Australian Vietnam veterans** for *incidence of cancers*.

1-484 In **Norwegian women of 645 mothers**, marked difference was observed between fatty fish and half-fat/lean *fish consumption and its effects on birth weight*. Consumption of half-fat/lean fish significantly increased birthweight, while fatty fish and shellfish consumption decreased in birthweight. Fatty fish expected to have higher levels of the omega-3 fatty acids.

2-120 The authors investigated whether exposure to POPs, using *PCB-153 and p,p'-DDE as biomarkers, are associated with sperm chromatin integrity* in the cohorts of **fishermen, 95 east coast and 99 west coast of Sweden**. The quintile with the lowest exposure to PCB-153 had significant lower levels of DNA Fragmentation Index compared to other four groups.

3-318 Possible risk of *endometrial cancer associated with environmental endocrine disruptors* was evaluated in the case-control study of **women in Örebro, Central Sweden**. For p,p'-DDE, OR=1.9, 95% CI=0.8-4.8 was obtained. Additional estrogen replacement therapy yielded in this category OR=2.3, 95% CI=0.6-6.8.

4-183 A cohort of **Russian workers who produced 2,4,5-T and 2,4,5-TriCP at a chemical factory of Ufa** was investigated for presenting the results of the detailed study of the third generation of the Russian cohort (247 workers, 314 children and 260 grandchildren). For the *third generation of the joint group of workers sex ratio* is of normal value (M/M+F=154/260=0.59), but for the line father-son-grandson the ratio is abnormally high (M/M+F=74/102=0.74).

5-431 Older age and *consumption of local foods, including meat and fish*, were predictors of the *sum of dioxins in serum* from **adolescent boys in Chapaevsk**. There was a suggestive inverse

association between current residential distance to Kimprom factory and sum of dioxins.

6-327 Health risk increased for **women who use more than 50% of pork from farms in Chapaevsk region**, where a chemical plant has produced hexachlorocyclohexane, liquid chlorine, vinyl chloride and others. An investigation of the potential association of *dioxin exposure with genital and maturational abnormalities* observed in Chapaevsk boy is underway.

7-218 **Pregnant women, aged 25-34 years, delivered their babies in a medical center in Central Taiwan** were surveyed. *The ratio of 4-OH-E2/2-OH-E2 significantly decreased with increasing tertiles of 2,3,7,8-TCDD concentrations* from 0.74 (CI=0.58-0.89) to 0.46 (CI=0.37-0.55). This is consistent with results from in vitro test and Seveso TCDD exposed women with decreased breast cancer risk.

8-204 **Male and female infants in Fukuoka, Japan**, were investigated for the *lymphocyte subsets and thyroid related chemicals* in the blood and breast milk. Dioxins, DDT, chlordane and PCBs significantly decreased the CD4+CD8+ lymphocyte subsets only in the female infants. CD3+ Lymphocyte subset was significantly increased by dioxins and heptachlor epoxide. The serum levels of T3, T4, TSH, TBG Dieldrin and chlordane significantly decreased the serum levels of T3 only in the female infants.

9-203 The relationship between *perinatal exposure to organochlorine pesticides, PCBs and dioxins and the total developmental condition* was investigated at about **10 months of age in Japanese male and female infants**. High exposure to some organochlorine compounds examined in the work caused Japanese infants to be backward in the development of motor, social ability and language, and their negative effects on the development may differ by sex.

10-180 The relationship between *levels of thyroid hormones and neonatal neurobehavioral status* was examined in the subjects of **545 mother-infant pairs in Sendai, Japan**. Single regression analyses showed that there were several significant association between thyroid hormones and the National Behavioral Assessment Scale cluster scores. Although cord blood T3 and free T3 had significant positive correlations with the Orientation cluster, TSH, T4 and free T4 in the maternal and cord blood had no significant correlation with any of the NBAS cluster scores. These findings suggest that thyroid function is a modulator of the neurobehavioral status in newborns.

11-130 The relationship of *TCDD and age of onset of menopause* was examined in a population **woman residing near Seveso, Italy in 1976**, at the time of a chemical plant explosion. The authors find little evidence of a clear linear dose-response relationship of serum TCDD levels and earlier onset of menopause. Instead, they observe a linear trend of earlier age of menopause for women with serum TCDD levels up to 118 ppt, but not higher.

12-118 The author examined the *association of individual TCDD and age of menarche* among **women who were premenarcheal in 1976, at the time of explosion**. Individual serum TCDD measurements are not significantly related to age of menarche among women in the Seveso Women's Health Study cohort.

13-328 The present cohort study explores the *association of dioxin and endometriosis* in a **highly exposed population of women in Kanawha Valley of West Virginia**. This study will evaluate a potential link between dioxin exposure and the incidence of endometriosis.

14-100 The case control analysis was based on **79 women diagnosed with invasive breast cancer and 52 controls diagnosed with benign breast conditions in California**. None of the odds ratios for any of the *congeners of PCDDs, PCDFs and chlorinated pesticides* or summary measures were significant different from one. One notable exception was OCDD, for which the odds ratio for the second and third tertiles appeared modestly elevated.

15-34 The median follow-up was 17 years for 1043 Vietnam veterans. There were 162 deaths during follow-up. Of these, there were 56 cardiovascular deaths, of which 37 were due to coronary

heart disease. **Ranch Hand veterans (n=469)** who were occupationally exposed to TCDD-contaminated herbicides did not show any consistent *association between metabolic syndrome and mortality from cardiovascular or any-cause deaths*.

16-30 The *relation between TCDD insulin sensitivity* was studied in a subset of the Air Force Health Study. They found no significant difference between Comparison and **Ranch Hand veterans** in mean insulin sensitivity index (S_I). However, within-pair differences on S_I decreased significantly with regard to within-pair difference on TCDD in the adverse direction.

17-29 All-cause mortality and mortality due to cancer and circulatory disease were investigated in 186 of 1262 **Ranch Hand veterans** and 2330 of 19078 Comparison veterans died from all causes during the post-service period through 1999. The relative risk of death from any cause was significantly increased among enlisted ground crew mostly due to a significant increase in the *risk of death caused by the circulatory system*.

18-28 Comparison veterans (1784), who flew or serviced C-130 transport aircraft in Southeast Asia (SEA) from 1962 to 1971 but did not spray herbicide, were examined for the risk of cancer at all SEER sites. Veterans (255) were diagnosed with at least one all-site cancer and 151 veterans had at least one SEER defined cancer. A statistically significant increased *risk of all-site SEER cancer was observed in the forth quartile of years in SEA* relative to the first quartile. A similar increase for prostate cancer was also observed.

19-410 The study has shown that **Australian Vietnam veterans** demonstrate an elevated *incidence of cancer, such as prostate cancer, lung cancer, and Hodgkin's disease*. The pattern of statistically elevated or lower cancer incidence rates varies between the service branches.