S02-04 Prenatal and postnatal exposure to methylmercury and neurodevelopment functioning in 7-year-old children of a coastal Northern Italian population

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Introduction: Environmental studies conducted in the lagoons of Marano and Grado, Italy, have shown mercury pollution from Italian industrial sites and the Idrija mercury mine (Slovenia). Methylmercury (MeHg) in fish is a well-documented prenatal neuro-toxicant. However, its dose-response relation is subject to debate especially at relatively low level of contamination. In addition, nutrients such as polyunsaturated fatty acids (PUFAs) which are high in fish are associated with positive outcomes of pregnancy and neurodevelopment. Therefore, a balance and impact assessment must be established to maximize the nutritional aspects of fish consumption while minimizing mercury exposure. Objective: This study presents the current status of follow-up in a cohort of mother-child pairs enrolled at delivery in the region of Friuli Venezia Giulia, Italy between 1999-2001. The purpose is to evaluate the neuropsychological endpoints of these children now at age 7 whose prenatal mercury status had been estimated at birth. Methods: In 1999-2001 we enrolled a cohort of 242 mother-child pairs and biological as well as questionnaire-based data on the mother and child in relation to possible mercury exposure were collected at birth. After 7 years all families were re-contacted, A sample of the child's hair was collected to determine the current mercury level. Trained personnel administered a series of neuropsychological cognitive and behavioral tests: NEPSY II, Wechsler Intelligence Scale for Children III, Child Behavior Check List, and an Italian reading test. A questionnaire was completed by the mother to evaluate lifestyle and dietary exposures. Results: As of October 2008, 151 families have participated in the follow-up, and of these, 149 have already completed all the tests. Mercury in maternal hair measured at birth and mercury in the hair of the child at 7 years of age are correlated (r =0.44; p<0.0001). The mean THg in child's hair at 7 years (n=102) is 730 ng/g (SD 623; median 549 ng/g; range: 23-2729 ng/g). On average total mercury levels in child's hair at 7 years are lower than those in mother's hair measured at birth (-740 ng/g). The correlation coefficient between current fish consumption and concentrations of THg at 7 years

of age is 0.42 (p<0.0001). Conclusion: This study will permit a better understanding of the effects of prenatal and childhood MeHg exposure on the neuropsychological functioning of children at school age (total scores and single domains scores).