DA VENIAM SCRIPTIS QUORUM NON GLORIA NOBIS
CAUSA, SED UTILITAS OFFICIUMQUE FUIT

# COLLEGIUM RAMAZZINI

# ANNUAL RAMAZZINI DAYS

# 24-27 October, 2019
# Carpi, Italy

Schedule of Events  -  Scientific Program  -  Abstracts by Session

**Presentation title:** Exposure to inorganic selenium in drinking water and incidence of amyotrophic lateral sclerosis: A long-term followup of a natural experiment

**Presenting Author:** Marco Vinceti

**Presenting Author e-mail:** marco.vinceti@unimore.it

**All authors and affiliations:**
Marco Vinceti (1)(2); Tommaso Filippini (1); Carlotta Malagoli (1); Federica Violi (1); Jessica Mandrioli (3); Dario Consonni (4); Kenneth J. Rothman (2); Lauren A. Wise (2)
1. University Modena and Reggio Emilia, Modena, Italy
2. Boston University School of Public Health, Boston, MA
3. St. Agostino Estense Hospital, Modena, Italy
4. IRCCS Ca' Granda Ospedale Maggiore Policlinico, Milan, Italy

**Presenting author profile:**
Dr. Vinceti is full professor of Public Health at the Department of Biomedical, Metabolic and Neural Sciences at University of Modena and Reggio Emilia where he works in the study of health effects of environmental and dietary risk factors, specifically regarding risk of chronic diseases as neurodegenerative diseases and cancer.

**Text of abstract:**

Background: Some studies have reported an association between overexposure to selenium and risk of amyotrophic lateral sclerosis (ALS), a rare degenerative disease of motor neurons. From 1986 through 2015, we followed a cohort in Northern Italy that had been inadvertently consuming tap water with unusually high concentrations of inorganic hexavalent selenium from 1974 to 1985.

Methods: We had previously documented an excess incidence of ALS in this cohort during 1986-1994. Here, we report extended follow-up of the cohort for an additional 21 years, encompassing 50,100 person-years of the exposed cohort and 2,233,963 person-years of the unexposed municipal cohort. We assessed ALS risk using a Poisson regression analysis, adjusting for age, sex and calendar year.

Results: We identified 7 and 112 incident ALS cases in the exposed and unexposed cohorts, respectively, yielding crude incidence rates of 14 and 5 cases per 100,000 person-years. The Poisson regression analysis produced an overall incidence rate ratio (IRR) for ALS of 2.8 (95% confidence interval (CI) 1.3, 6), with a substantially stronger IRR in 1986-1994 (8.2, 95% CI 2.7, 24.7) than in 1995-2015 (1.5, 95% CI 0.5, 4.7), and among women (5.1, 95% CI 1.8, 14.3) than men (1.7, 95% CI 0.5, 5.4).

Conclusions: Overall, these results indicate an association between high exposure to inorganic selenium, a recognized neurotoxicant, and ALS incidence, with declining rates after cessation of exposure and stronger effects among women.