The Contribution of Biomonitoring in Evaluating Public Health Interventions to Reduce Second Hand Smoke Exposure

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September 28, 2011
Biomonitoring

An assessment of internal dose or exposure by measuring a chemical (or its metabolite or reaction product) in human blood, urine, or other tissue

Provides information for:

• Public health response to a known or suspected excessive exposure to a toxicant
  ➢ Identify the exposure and affected population
  ➢ Assess health risk from the exposure
  ➢ Treat and/or prevent exposure

• Health research to determine what toxicants and what internal dose levels cause disease
Second Hand Smoke Exposure

Using serum measurements, CDC assesses the number of smokers and those exposed to secondhand smoke in the U.S. every two years.
Serum Cotinine Levels for Non-Tobacco Users by age, sex, and race/ethnicity (NHANES III, 1988-1991)
Serum Cotinine Levels for Non-Tobacco Users from home exposure *

(NHANES III, 1988-1991)

* Ages 4 & older

Number of smokers in the home

Geometric mean serum cotinine (ng/mL)
Serum Cotinine Levels for Non-Tobacco Users from work exposure*
(NHANES III, 1988-1991)

* Ages 17 & older

Number of hours exposed at work:
- 0
- 1-3
- ≥ 4
Casino Workers Exposure to Second Hand Smoke

Serum cotinine level (geom. mean in ng/mL)

- No home or work exposure
- Home exposure only
- Work exposure only
- Home and work exposure
- Casino workers

NHANES III

NIOSH study
Low Birth Weight Babies in Non-Smoking Women

Percent of babies with low birth weight (< 2500g)

Serum cotinine (ng/mL)

California Dept. of Health Services and NCEH
Decline in Second Hand Smoke Exposure in Nonsmokers

Decline from 1988 to 2008: ~ 76%
Children and Teenagers are Still More Exposed to Second Hand Smoke than Adults

- Ages 4 - 11
- Ages 12 - 19
- Ages 20 +

Serum Cotinine, ng/mL

- 1999 - 2000
- 2001 - 2002
- 2003 - 2004
- 2005 - 2006
- 2007 - 2008
Thank You!

Questions?

For more information please contact Centers for Disease Control and Prevention
1600 Clifton Road NE, Atlanta, GA 30333
Telephone, 1-800-CDC-INFO (232-4636)/TTY: 1-888-232-6348
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The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.