References - Statement on potential risks from cadmium in the diet of infants

In this guide

Adams SV[1], Quraishi SM, Shafer MM, Passarelli MN, Freney EP, Chlebowski RT, Luo J, Meliker JR, Mu L, Neuhouser ML, Newcomb PA. Dietary cadmium exposure and risk of breast, endometrial, and ovarian cancer in the Women's Health Initiative. 2014 Jun;**122**(6):594-600.: https://doi.org/10.1289/ehp.1307054 Epub 2014 Mar 14.

Asagba SO. Role of diet in absorption and toxicity of oral cadmium – a review of the literature. African Journal of Biotechnology 2009 8(25): 7428 – 7436.

Adebambo OA, Ray PD, Shea D, Fry RC. Toxicological responses of environmental mixtures: environmental metals mixtures displaysynergistic induction of metal-responsive and oxidative stress genes in placental cells. Toxicol. Appl. Pharmacol, **289** (3): 534 – 541.

Agency for Toxic Substances and Disease Registry (ATSDR). U.S. Department of Health And Human Services Public Health Service Toxicological profile for cadmium. September 2012.

Aquino NB, Sevigny MB, Sabagan J, Louie MC. Role of cadmium and nickelin estrogen receptor signalling in breast cancer: Metalloestragens or not? J. Environ.Sci.Health C. Environ.Carcinog, Ecotoxicol. Rev, 2012 **30** (3): 189 – 224.

Bates, B.; Lennox, A.; Prentice, A.; Bates, C.; Page, P.; Nicholson, S.; Swan, G. (2014) National Diet and Nutrition Survey Results from Years 1, 2, 3 and 4 (combined) of the Rolling Programme (2008/2009 – 2011/2012):

Main heading (publishing.service.gov.uk)

Cataldo DA, Garland TR, Wildung RE Cadmium uptake kinetics in intact soybean plants. Plant physiology, 1983 73: 844 – 848.

Chakraborty PK, Lee W-K, Moliter M, Wolff NA Thrévenod F cadmium induces Wnt signalling to upregulate proliferation and survival genes in sub-confluent kidney proximal tubule cells. Molecular Cancer 2010 **9**: 102 – 116.

Chao HH, Guo CH2, Huang CB1, Chen PC3, Li HC3, Hsiung DY4, Chou YK5. Arsenic, cadmium, lead, and aluminium concentrations in human milk at early stages of lactation Pediatr Neonatol. 2014 Apr;**55**(2):127-34. doi: 10.1016/j.pedneo.2013.08.005. Epub 2013 Nov 11.

Chmielowska-Bąk J, Isbianska K, Deckert J, The toxic Doppelganger: on the ionic and molecular mimicry of cadmium. Acta Biochimica Polonica 2013 **60**(3): 369 – 374.

Cho YA, Kim J, Woo HD, Kang M Dietary cadmium intake and the risk of cancer: a meta-analysis. PLoS One. 2013 Sep 17;8(9):e75087Department of Health (DH) (1994). The COMA report on Weaning and the Weaning Diet. Report on Health and Social Subjects 45. The Stationary Office London.

DH (2013). Diet and Nutrition Survey of Infants and Young Children (DNSIYC), 2011: Diet and nutrition survey of infants and young children, 2011 - GOV.UK (www.gov.uk).

Dursun A, Yurdakok K, So Y. Maternal risk factors associated with lead, mercury and cadmium levels in umbilical cord blood, breast milk and newborn hair. J. Matern. Fetal. Neonatal. Med 2016 29(6):954 – 961.

Esteban-Vasallo MD, Aragonés N, Pollan M, López-Abente G, Perez-Gomez B Mercury, cadmium and lead levels in human placenta: A systematic review. Environmental Health Perspectives 2012 **120** (10):1369 – 1377.

EFSA 2009.Scientific opinion of the Panel on Contaminants in the Food Chain on a request from the European Commission on cadmium in food. The EFSA Journal 2009 **980**: 1 – 139.

EFSA 2011a. Comparison of the approaches taken by EFSA and JECFA to establish a HBGV for cadmium. EFSA Journal 2011 **9** (2): 2006 – 2033.

EFSA 2011b. EFSA Panel on Contaminants in the Food Chain (CONTAM); Scientific Opinion on tolerable weekly intake for cadmium. EFSA Journal 2011 **9** (2): 1975 – 1993.

FSA (2016a). Survey of metals and other elements in infant foods (to be published).

FSA (2016b). Study of metals and other elements in the 2014 Total Diet Study. (to be published).

Gallagher CM, Chen JJ, Kovach JS The relationship between body iron stores and blood and urine cadmium concentrations in US never-smoking, non-pregnant women aged 20-49 years. Environ Res. 2011 Jul;**111**(5):702-7. https://doi.org/10.1016/j.envres.2011.03.007. Epub 2011 Apr 19.

Gao Y, Zhang Y, Yi J, Zhou J, Huang X, Shi X, Xiao S, Lin D. A longitudinal study on urinary cadmium and renal tubular protein excretion of nickel–cadmium battery workers after cessation of cadmium exposure. International Archives of Occupational and Environmental Health (2016), **89**, (7), 1137–1145.

García-Esquinas E1, Pérez-Gómez B, Fernández MA, Pérez-Meixeira AM, Gil E, de Paz C, Iriso A, Sanz JC, Astray J, Cisneros M, de Santos A, Asensio A, García-Sagredo JM, García JF, Vioque J, Pollán M, López-Abente G, González MJ, Martínez M, Bohigas PA, Pastor R, Aragonés N Mercury, lead and cadmium in human milk in relation to diet, lifestyle habits and sociodemographic variables in Madrid (Spain). Chemosphere. 2011 Sep;**85**(2):268-76. doi: 10.1016/j.chemosphere.2011.05.029. Epub 2011 Jun 21.

Golabek T, Darewicz B, Kudelska J, Socha K, Markiewicz-Zukowska R, Chlosta P. Okon K, Borawska M. cadmium in urothelial carcinoma of the bladder. Pol J Pathol 2014 **65**(1): 55 – 59.

Gürbay A1, Charehsaz M, Eken A, Sayal A, Girgin G, Yurdakök M, Yiğit Ş, Erol DD, Şahin G, Aydın A. Toxic metals in breast milk samples from Ankara, Turkey: assessment of lead, cadmium, nickel, and arsenic levels Biol Trace Elem Res. 2012 Oct;**149**(1):117-22. doi: 10.1007/s12011-012-9400-2. Epub 2012 Apr 18.

Harrison RM. Toxic metals in street and household dust. Science of the total environment 1979 **11**(1): 89 – 97.

He W, Guo W, Qian Y, Zhang S, Ren D, Liu S. Synergistic hepatotoxicity by cadmium and chlorpyrifos: disordered lipid homeostasis. Molecular Medicine Reports 2015 **12** (1): 303 – 308.

International Agency for Research on Cancer (IARC) Monograph 100C Cadmium and cadmium compounds. 2012.

Jung SY, Kin S, Lee K, Kim JY, Bae WK, Lee K, Han J-S, Kim S. Association between secondhand smoke exposure and blood lead and cadmium concentration in community dwelling women: the fifth Korea national Health and Nutrition Examination Survey (2010 – 2012). BMJ Open 2015 **5**: e008218. doi:10.1136/bmjopen-2015-008218.

Karthakeyan J, Bavani G. Effect of cadmium on lactate dehydrogenase isozyme, succinate dehydrogenase and Na^{+}-K^{+}-ATPase in liver tissue of rat. J. Environ. Biol. 2009 30(5): 895 – 898.

Kolvar IZ, Strehlow CD, Richmond J, Thompson MG. Perinatal lead and cadmium burden in a British urban population. Arch Dis Child. 1984 Jan;**59**(1):36-9.

Lamas CA. Gollücke APB, Dolder H. Grape juice concentrate (G8000) intake mitigates testicular morphological and ultrastructural damage following cadmium intoxication. International Journal of Experimental Pathology 2015 **96**? 301 – 310.

Lane TW, Morel FM. A biological function for cadmium in marine diatoms, Proc. Nat. Acad. Sci 2000 **97**: 4627 – 4631.

Leierer J,, Rudnicki M, Branif fS-J, Perco P, Koppelstaetter C, Mühlberger I, Eder S; Kerschbaum J, Schwarzer C, Schroll A, Weiss G, Schneeberger S, Wagner S, Königsrainer A,. Böhmig GA, Mayer G. **Metallothioneins and renal ageing.** Nephrol Dial Transplant (2016) **31**: 1444–1452 https://doi.org/10.1093/ndt/gfv451

Advance Access publication 3 February 2016.

Martin P, Boulukos KE, Poggi MC, Pogninec P. Long-term extracellular signal-regulated kinase activation following cadmium intoxication is negatively regulated by a protein kinase C-dependent pathway affecting cadmium transport. FEBS J. 2009. **276**(6): 1667 – 1679.

McBride MB, Shayler HA, Splietyhof HM, Mitchell RG, Marquez-Bravo LG, Ferenz GS, Russell-Anell JM, Casey L, Bachman S. Concentrations of lead, cadmium and barium in urban garden-grown vegetables: the impact of soil variables. Environ. Pollit. 2014 **194**:254 – 261.

Nair AR. DeGheselle O, Smeets K, Van Kerkhove E and Cuypers A Cadmium-induced pathologies:where is the oxidative balance lost (or not?) Int.J.Mol.Sci.(2013) **14** 6116 – 6143.

Nawrot TS[1], Martens DS, Hara A, Plusquin M, Vangronsveld J, Roels HA, Staessen JA. Association of total cancer and lung cancer with environmental exposure to cadmium: the meta-analytical evidence**.** 2015 Sep;**26**(9):1281-8. https://doi.org/10.1007/s10552-015-0621-5 Epub 2015 Jun 25.

Olszowski T1, Baranowska-Bosiacka I2, Rębacz-Maron E3, Gutowska I4, Jamioł D4, Prokopowicz A5, Goschorska M6, Chlubek D6. Cadmium Concentration in Mother's Blood, Milk, and Newborn's Blood and Its Correlation with Fatty Acids, Anthropometric Characteristics, and Mother's Smoking Status. Biol Trace Elem Res. 2016 Nov;**174**(1):8-20. Epub 2016 Apr 4.

Pan C, Liu H-D, Gong Z, Yu X, Hou X-B, Xie D-D, Zhu X-B, Li H-W, Tang J-T, Xu Y-F, Yu J-Q, Zhang L-Y, Fang H, Xiao K-H, Chen Y-G, Wang J-Y, Pang Q Chen Y, Sun J-P. Cadmium is a potent inhibitor of PPM phosphatases and targets the M1 binding site. Scientific Reports 2013 **3**:2333 – 43.

Pires VC, Gollücke APB, Ribiero DA, Lungato L, Almeida VD, Aguiar Jr. O. Grape juice concentrate protects reproductive parameters in male rats against cadmium-induced damage: a chronic assay. British Journal of Nutrition 2013 **110**: 2020 – 2029.

Prabu SM, Shagirtha K, Renugadevi J. Amelioration of cadmium-induced oxidative stress, impairment in lipids and plasma lipoproteins by the combined treatment with quercetin and α-tocopherol in rats. J Food Sci. 2010 Sep;75(7):T132-40. Proc Natl Acad Sci U S A. 2000 Apr 25;**97**(9):4627-31.

Rawlins, BG.; McGrath, SP.; Scheib, AJ.; Breward, N.; Cave, M.; Lister, TR.; Ingham, M.; Gowing, C. and Carter, S. (2012) 'The Advanced Soil Geochemical Atlas of England and Wales': Advanced Soil Geochemical Atlas Ebook .

Rebeniac M, Wojciechowska-Mazurek M, Mania M Szynal T, Strzelecka A, Starska K. Exposure to lead and cadmium released from ceramics and glassware intended to come into contact with food. Rokz PanstwZaki Hig 2014 **65** 4:301 – 309.

Richter PS, Bishop EE, Wang J, Swahn MH. Tobacco smoke exposure and levels of urinary metals in the US youth and adult population: the national Health and Nutrition Examination Survey (NHANES) 1999 – 2004. Int. J. Environ. Res. Public Health 2009 **6**: 1930 – 1946.

Sadiq S, Ghazala Z, Chowdhury A, Büsselberg D. Metal toxicity at the synapse: presynaptic, postsynaptic and long-term effects. J. Toxicol. 2012 Article ID 132671.

Sangartit W, Kukongviriyapan U, Donpunha W, Pakdeechote P, Kukongviriyapan V [2], Surawattanawan P, Greenwald SE· Tetrahydrocurcumin protects against cadmium-induced hypertension, raised arterial stiffness and vascular remodeling in mice. PLoS One. 2014 Dec 11;**9**(12):e114908: https://doi.org/10.1371%2Fjournal.pone.0114908 eCollection 2014.

Santana VP[1], Salles ÉS[2], Correa DE[2], Gonçalves BF[1], Campos SG[3], Justulin LA[1], Godinho AF[1], Scarano WR[4]. Long-term effects of perinatal exposure to low doses of cadmium on the prostate of adult male rats Int J Exp Pathol. 2016 Aug;**97** (4):310-316. https://doi.org/10.1111/iep.12193 Epub 2016 Jul 28.

Shariat SZS, Alinejad N. Inhibition of human ceruloplasmin (ferroxidase) by cadmium. Res. Pharm Sci 2008 **3**(1): 47 – 52.

Smolders E. Cadmium uptake by plants. IJOMEH 2001 **14**(2): 177 – 183.

Smyth, D. and Johnston, C. (2013) 'Geochemistry: Methodology' in: Young, M. and Donald, A. (eds.) **A Guide to the Tellus Data Belfast,** UK: Geological Survey of Northern Ireland pp.33-44: http://nora.nerc.ac.uk/509171/

Sun Z, Yue B, Yang Z, Li X, Wu Y, Yin S.Determination of 24 minerals in human milk by inductively coupled plasma mass spectrometry with microwave digestion. Wei Sheng yan Jui 2013 **42**: 504 – 9 (Abstract only. Article in Chinese).

Takiguchi M, Achanzar WE, Qu W, Li G, Waalkes MP.Effects of cadmium on DNA-(Cytosine-5) methyltransferase activity and DNA methylation status during

cadmium-induced cellular transformation. Exp Cell Res. 2003 Jun 10;286(2):355-65.

Turner A, Simmons L. Elemental concentrations and bioaccessability in UK household dust. Science of the total environment 2006 **371**(1 – 3): 74 – 81.

US EPA (2011a) 'Exposure Factors Handbook Chapter 5: Soil and Dust Ingestion' : Exposure Factors Handbook 2011 Edition (Final Report) | Risk Assessment Portal | US EPA.

US EPA (2011b) 'Exposure Factors Handbook Chapter 6: Inhalation Rates': Exposure Factors Handbook 2011 Edition (Final Report) | Risk Assessment Portal | US EPA.

Winiarska-Mieczan A. Cadmium, lead, copper and zinc in breast milk in Poland. Biol Trace Elem Res. 2014 Jan;**157**(1):36-44. doi: 10.1007/s12011-013-9870-x. Epub 2013 Dec 12.

Woolridge, M.; Hay, A.; Renfrew, R.; Cade, J.; Doughty, J.; Law, G.; Madden, S.; McCormick, F.; Newell, S.; Roman, E.; Shelton, N.; Sutcliffe, A. and Wallis, S. (2004) 'SUREmilk study - Surveillance of residues in human milk: Pilot studies to explore alternative methods for the recruitment, collection, storage and management of an archive of breast milk samples.' Final Report to FSA: Pilot Studies to Explore Alternative Methods for Recruitment, Collection, Storage and Management of an Archive of Breast Milk Samples | National Agricultural Library (usda.gov)

World Health Organization 2011. Cadmium in Drinking-water

Background document for development of WHO **Guidelines for Drinking-water Quality***:* Microsoft Word - Fourth Edition Cadmium final 14 June 2011.doc (who.int).

Yang F, Zhang C, Zhuang Y, Gu X, Xiao Q, Guo X, Hu G, Cao H. Oxidative stress and cell apoptosis in caprine liver induced by molybdenum and cadmium in combination. Biol. Trace Elem. Res. 2016 **173**: 79 – 86.

Yoshida M, Ohta H, Yamauchi Y, seki Y. Age dependent changes in metallothionein levels in liver and kidney of the Japanese. Biological Trace Element Research 1993 **63**: 167 – 175.

Zhi Y, He K, Sun T, Zhu Y, Zhou Q. Assessment of potential soybean cadmium excluder cultivars at different concentrations of Cd in soils. J Environ Sci (China).

2015 Sep 1;**35**: 108-14. doi: 10.1016/j.jes.2015.01.031. Epub 2015 Jun 27.

Zlotkin SH and Cherian MG Hepatic Metallothionein as a Source of Zinc and Cysteine during the First Year of Life Pediatric Research 1988 **24**(3) 326 – 329.