

9. REFERENCES

- ACGIH. 2001. Methylene bisphenyl isocyanate. In: Documentation of the threshold limit values for chemical substances. Cincinnati, OH: American Conference of Governmental Industrial Hygienists.
- ACGIH. 2016a. Toluene diisocyanate, 2,4- or 2,6- (or as a mixture). Cincinnati, OH: American Conference of Governmental Industrial Hygienists.
- ACGIH. 2016b. Definitions and notations. In: TLVs and BEIs based on the documentation of the threshold limit values for chemical substances and physical agents and biological exposure indices. Cincinnati, OH: American Conference of Governmental Industrial Hygienists, 72-74, 77.
- Adams WG. 1975. Long-term effects on the health of men engaged in the manufacture of tolylene diisocyanate. *Br J Ind Med* 32(1):72-78.
- AIHA. 2013. Emergency response planning guidelines (ERPG). Fairfax, VA: American Industrial Hygiene Association. <https://www.aiha.org/get-involved/AIHAGuidelineFoundation/EmergencyResponsePlanningGuidelines/Pages/default.aspx>. January 08, 2014.
- Altman PL, Dittmer DS. 1974. 2nd ed. Bethesda, MD: Federation of American Societies of Experimental Biology.
- Andersen M, Binderup ML, Kiel P, et al. 1980. Mutagenic action of isocyanates used in the production of polyurethanes. *Scand J Work Environ Health* 6(3):221-226.
- Andersen ME, Krishnan K. 1994. Relating *in vitro* to *in vivo* exposures with physiologically based tissue dosimetry and tissue response models. In: Salem H, ed. *Animal test alternatives: Refinement, reduction, and replacement*. New York, NY: Marcel Dekker, Inc., 9-25.
- Andersen ME, Clewell HJ, Gargas ML, et al. 1987. Physiologically based pharmacokinetics and the risk assessment process for methylene chloride. *Toxicol Appl Pharmacol* 87(2):185-205.
- Anderson D, Styles JA. 1978. An evaluation of 6 short-term tests for detecting organic chemical carcinogens. Appendix II. The bacterial mutation test. *Br J Cancer* 37:924-930.
- Aoyama K, Huang J, Ueda A, et al. 1994. Provocation of respiratory allergy in guinea pigs following inhalation of free toluene diisocyanate. *Arch Environ Contam Toxicol* 26(3):403-407.
- Arts JH, de Jong WH, van Triel JJ, et al. 2008. The respiratory local lymph node assay as a tool to study respiratory sensitizers. *Toxicol Sci* 106(2):423-434.
- ATSDR. 1989. Decision guide for identifying substance-specific data needs related to toxicological profiles; Notice. Agency for Toxic Substances and Disease Registry. *Fed Regist* 54(174):37618-37634.

* Not cited in text

9. REFERENCES

- ATSDR. 2017. 1,3-Toluene diisocyanate. Full SPL data. Substance priority list (SPL) resource page. Agency for Toxic Substances and Disease Registry, Centers for Disease Control and Prevention. <http://www.atsdr.cdc.gov/SPL/resources/index.html>. October 6, 2017.
- Austin S. 2007. Biological monitoring of TDI-derived amines in polyurethane foam production. *Occup Med (Lond)* 57(6):444-448.
- Axford AT, McKerrow CB, Jones AP, et al. 1976. Accidental exposure to isocyanate fumes in a group of firemen. *Br J Ind Med* 33(2):65-71.
- Banks DE, Rando RJ. 1988. Recurrent asthma induced by toluene diisocyanate. *Thorax* 43(8):660-662.
- Banks DE, Barkman HW, Jr., Butcher BT, et al. 1986. Absence of hyperresponsiveness to methacholine in a worker with methylene diphenyl diisocyanate (MDI)-induced asthma. *Chest* 89(3):389-393.
- Banks DE, Rando RJ, Barkman HW, Jr. 1990. Persistence of toluene diisocyanate-induced asthma despite negligible workplace exposures. *Chest* 97(1):121-125.
- Banks DE, Sastre J, Butcher BT, et al. 1989. Role of inhalation challenge testing in the diagnosis of isocyanate-induced asthma. *Chest* 95(2):414-423.
- Barnes DG, Dourson M. 1988. Reference dose (RfD): Description and use in health risk assessments. *Regul Toxicol Pharmacol* 8(4):471-486.
- Bascom R, Kennedy TP, Levitz D, et al. 1985. Specific bronchoalveolar lavage IgG antibody in hypersensitivity pneumonitis from diphenylmethane diisocyanate. *Am Rev Respir Dis* 131(3):463-465.
- Baur X. 1995. Hypersensitivity pneumonitis (extrinsic allergic alveolitis) induced by isocyanates. *J Allergy Clin Immunol* 95(5 Pt 1):1004-1010.
- Baur X, Fruhmann G. 1981. Specific IgE antibodies in patients with isocyanate asthma. *Chest* 80(1 Suppl):73-76.
- Baur X, Dewair M, Roemmelt H. 1984. Acute airway obstruction followed by hypersensitivity pneumonitis in an isocyanate (MDI) worker. *J Occup Med* 26(4):285-287.
- Beghe B, Padoan M, Moss CT, et al. 2004. Lack of association of HLA class I genes and TNF α -308 polymorphism in toluene diisocyanate-induced asthma. *Allergy* 59(1):61-64.
- Berger GS, ed. 1994. Epidemiology of endometriosis. In: *Endometriosis: Modern surgical management of endometriosis*. New York, NY: Springer-Verlag, 3-7.
- Bernstein DI, Kashon M, Lummus ZL, et al. 2013. CTNNA3 (α -Catenin) gene variants are associated with diisocyanate asthma: A replication study in a Caucasian worker population. *Toxicol Sci* 131(1):242-246.
- Bernstein JA. 1996. Overview of diisocyanate occupational asthma. *Toxicology* 111(1-3):181-189.
- Bianchi AP, Joyner TK. 1997. Determination of toluene-2,4-diisocyanate in environmental and workplace air by sampling onto Tenax-TA followed by thermal desorption and capillary gas chromatography using flame ionisation and ion-trap detection. *J Chromatogr A* 771(1-2):233-239.

9. REFERENCES

- Bidleman TF. 1988. Atmospheric processes. Wet and dry deposition of organic compounds are controlled by their vapor- particle partitioning. *Environ Sci Technol* 22(4):361-367.
- Bignon JS, Aron Y, Ju LY, et al. 1994. HLA Class II alleles in isocyanate-induced asthma. *Am J Respir Crit Care Med* 149(1):71-75.
- Bilan RA, Haflidson WO, McVittie DJ. 1989. Assessment of isocyanate exposure during the spray application of polyurethane foam. *Am Ind Hyg Assoc J* 50(6):303-306.
- Bilban M. 2004. Mutagenic testing of workers exposed to toluene-diisocyanates during plastics production process. *Am J Ind Med* 45(5):468-474.
- Blanc PD. 2018. Section II: Specific poisons and drugs: Diagnosis and treatment: Isocyanates. In: *Poisoning & drug overdose*. 7th ed. McGraw-Hill Education. <https://accessmedicine.mhmedical.com/book.aspx?bookid=2284>. May 30, 2018.
- Blindow S, Preisser AM, Baur X, et al. 2015. Is the analysis of histamine and/or interleukin-4 release after isocyanate challenge useful in the identification of patients with IgE-mediated isocyanate asthma? *J Immunol Methods* 422:35-50. 10.1016/j.jim.2015.03.024.
- Bobeldijk I, Karlsson D, Pronk A, et al. 2008. Validation of transferability of DBA derivatization and LC-MS/MS determination method for isocyanates via an interlaboratory comparison. *Ann Occup Hyg* 52(8):757-763.
- Bodner KM, Burns CJ, Randolph NM, et al. 2001. A longitudinal study of respiratory health of toluene diisocyanate production workers. *J Occup Environ Med* 43(10):890-897.
- Bonauto DK, Sumner AD, Curwick CC, et al. 2005. Work-related asthma in the spray-on truck bed lining industry. *J Occup Environ Med* 47(5):514-517.
- Booth K, Cummings B, Karoly WJ, et al. 2009. Measurements of airborne methylene diphenyl diisocyanate (MDI) concentration in the U.S. workplace. *J Occup Environ Hyg* 6(4):228-238. 10.1080/15459620902724060.
- Boschetto P, Fabbri LM, Zocca E, et al. 1987. Prednisone inhibits late asthmatic reactions and airway inflammation induced by toluene diisocyanate in sensitized subjects. *J Allergy Clin Immunol* 80(3 Pt 1):261-267.
- Broberg K, Tinnerberg H, Axmon A, et al. 2008. Influence of genetic factors on toluene diisocyanate-related symptoms: Evidence from a cross-sectional study. *Environ Health* 7:15.
- Brochhagen FK, Grieveson BM. 1984. Environmental aspects of isocyanates in water and soil. *Cell Polym* 3:11-17.
- Brorson T, Skarping G, Sango C. 1991. Biological monitoring of isocyanates and related amines. IV. 2,4- and 2,6-toluenediamine in hydrolysed plasma and urine after test-chamber exposure of humans to 2,4- and 2,6-toluene diisocyanate. *Int Arch Occup Environ Health* 63(4):253-259.
- Buckley LA, Jiang XZ, James RA, et al. 1984. Respiratory tract lesions induced by sensory irritants at the RD50 concentration. *Toxicol Appl Pharmacol* 74(3):417-429.

9. REFERENCES

- Budnik LT, Preisser AM, Permentier H, et al. 2013. Is specific IgE antibody analysis feasible for the diagnosis of methylenediphenyl diisocyanate-induced occupational asthma? *Int Arch Occup Environ Health* 86(4):417-430.
- Burge PS. 1982. Non-specific bronchial hyper-reactivity in workers exposed to toluene di-isocyanate, diphenyl methane di-isocyanate and colophony. *Eur J Respir Dis Suppl* 123:91-96.
- Buschmann J, Koch W, Fuhst R, et al. 1996. Embryotoxicity study of monomeric 4,4'-methylenediphenyl diisocyanate (MDI) aerosol after inhalation exposure in Wistar rats. *Fundam Appl Toxicol* 32(1):96-101.
- Butcher BT, Jones RN, O'Neil CE, et al. 1977. Longitudinal study of workers employed in the manufacture of toluene-diisocyanate. *Am Rev Respir Dis* 116(3):411-421.
- Carbonnelle P, Boukourt S, Lison D, et al. 1996. Determination of toluenediamines in urine of workers occupationally exposed to isocyanates by high-performance liquid chromatography. *Analyst* 121(5):663-669.
- Chang KC, Karol MH. 1984. Diphenylmethane diisocyanate-induced asthma: Evaluation of the immunologic responses and application of an animal model of isocyanate sensitivity. *Clin Allergy* 14(4):329-340.
- Chang SN, Burg WR. 1982. Determination of airborne 2,4-toluenediisocyanate vapors. *J Chromatogr* 246(1):113-120.
- ChemSpider. 2013. Methylene diphenyl diisocyanate. ChemSpider. Royal Society of Chemistry. <http://www.chemspider.com/Chemical-Structure.7289.html?rid=d6605a66-cfd2-4c9d-a2d6-3491d6d532db>. December 30, 2013.
- Chester EH, Martinez-Catanchi FL, Schwartz HJ, et al. 1979. Patterns of airway reactivity to asthma produced by exposure to toluene di-isocyanate. *Chest* 75(2 Suppl):229-231.
- Choi J, Lee K, Kim C, et al. 2009. The HLA DRB1*1501-DQB1*0602-DPB1*0501 haplotype is a risk factor for toluene diisocyanate-induced occupational asthma. *Int Arch Allergy Immunol* 150(2):156-163. 10.1159/000218118.
- Clark RL, Bugler J, McDermott M, et al. 1998. An epidemiology study of lung function changes of toluene diisocyanate foam workers in the United Kingdom. *Int Arch Occup Environ Health* 71(3):169-179.
- Clark RL, Bugler J, Paddle GM, et al. 2003. A 17-year epidemiological study on changes in lung function in toluene diisocyanate foam workers. *Int Arch Occup Environ Health* 76(4):295-301.
- Clewell HJ, Andersen ME. 1985. Risk assessment extrapolations and physiological modeling. *Toxicol Ind Health* 1(4):111-131.
- Cocker J. 2011. Biological monitoring for isocyanates. *Ann Occup Hyg* 55(2):127-131.

9. REFERENCES

- Colli M, Zabarini L, Melzi D'Eril GV, et al. 1993. Evaluation of a modified Marcali technique with high-performance liquid chromatography-ultraviolet detection for the determination of 2,4-toluene diisocyanate in air. *J Chromatogr* 643(1-2):51-54.
- Corbini G, Corti P, Dreassi E, et al. 1991. Determination of diisocyanate monomers in air by differential-pulse polarography. *Analyst* 116(7):731-734.
- Costa LG, Aschner M, Vitalone A, et al. 2004. Developmental neuropathology of environmental agents. *Annu Rev Pharmacol Toxicol* 44:87-110.
- Crespo J, Galan J. 1999. Exposure to MDI during the process of insulating buildings with sprayed polyurethane foam. *Ann Occup Hyg* 43(6):415-419.
- Cvitanovic S, Zekan L, Marusic M. 1989. Occurrence and specificity of IgE antibodies to isocyanates in occupationally exposed workers. *Int Arch Occup Environ Health* 61(7):483-486.
- Daftarian HS, Lushniak BD, Reh CM, et al. 2002. Evaluation of self-reported skin problems among workers exposed to toluene diisocyanate (TDI) at a foam manufacturing facility. *J Occup Environ Med* 44(12):1197-1202.
- Dahlin J, Spanne M, Dalene M, et al. 2008. Size-separated sampling and analysis of isocyanates in workplace aerosols--Part II: Aging of aerosols from thermal degradation of polyurethane. *Ann Occup Hyg* 52(5):375-383.
- Dalene M, Skarping G, Lind P. 1997. Workers exposed to thermal degradation products of TDI and MDI-based polyurethane: Biomonitoring of 2,4-TDA, 2,6-TDA, and 4,4'-MDA in hydrolyzed urine and plasma. *Am Ind Hyg Assoc J* 58(8):587-591.
- *Dart RC. 2004. Miscellaneous chemical agents. In: *Medical toxicology*. 3rd ed. Philadelphia, PA: Lippincott Williams & Wilkins, 1181-1187.
- Day BW, Jin R, Basalyga DM, et al. 1997. Formation, solvolysis, and transcarbamoylation reactions of bis(S-glutathionyl) adducts of 2,4- and 2,6-diisocyanatotoluene. *Chem Res Toxicol* 10(4):424-431.
- Day BW, Jin R, Karol MH. 1996. *In vivo* and *in vitro* reactions of toluene diisocyanate isomers with guinea pig hemoglobin. *Chem Res Toxicol* 9(3):568-573.
- D'Eril GM, Cappuccia N, Colli M, et al. 1995. Gas chromatography of 4,4'-diphenylmethane diisocyanate in the workplace atmosphere. *J Chromatogr A* 718(1):141-146.
- De Vooght V, Smulders S, Haenen S, et al. 2013. Neutrophil and eosinophil granulocytes as key players in a mouse model of chemical-induced asthma. *Toxicol Sci* 131(2):406-418. 10.1093/toxsci/kfs308.
- Diem JE, Jones RN, Hendrick DJ, et al. 1982. Five-year longitudinal study of workers employed in a new toluene diisocyanate manufacturing plant. *Am Rev Respir Dis* 126(3):420-428.
- Dieter MP, Boorman GA, Jameson CW, et al. 1990. The carcinogenic activity of commercial grade toluene diisocyanate in rats and mice in relation to the metabolism of the 2,4- and 2,6-TDI isomers. *Toxicol Ind Health* 6(6):599-621.

9. REFERENCES

- DOE. 2016a. Protective Action Criteria (PAC) with AEGLs, ERPGs, & TEELs: Rev. 29 for Chemicals of Concern - May 2016. Oak Ridge, TN: U.S. Department of Energy. <https://sp.eota.energy.gov/pac/>. January 10, 2018.
- DOE. 2016b. Table 3: Protective Action Criteria (PAC) Rev. 29 based on applicable 60-minute AEGLs, ERPGs, or TEELs. The chemicals are listed by CASRN. May 2016. Oak Ridge, TN: U.S. Department of Energy. https://sp.eota.energy.gov/pac/docs/Revision_29_Table3.pdf. January 10, 2018.
- Duff PB. 1983. The fate of TDI in the environment. In: Polyurethane- new paths to progress marketing technology. Proceedings of the SPI 6th International Tech/Market Conference, 408-412.
- Duff PB. 1985. Fate of toluene diisocyanate in air. Phase II study. In: Proceedings of the SPI 6th International Tech/Market Conference 29:9-14.
- Dyson WL, Hermann ER. 1971. Reduction of atmospheric toluene diisocyanate by water vapor. *Am Ind Hyg Assoc J* 32(11):741-744.
- Eisenreich SJ, Looney BB, Thornton JD. 1981. Airborne organic contaminants in the Great Lakes ecosystem. *Environ Sci Technol* 15(1):30-38.
- Ek CJ, Dziegielewska KM, Habgood MD, et al. 2012. Barriers in the developing brain and neurotoxicology. *Neurotoxicology* 33(3):586-604.
- EPA. 1988. Recommendations for the documentation of biological values for use in risk assessment. Cincinnati, OH: U.S. Environmental Protection Agency. PB88179874.
- EPA. 1990. Interim methods for development of inhalation reference concentrations. Washington, DC: U.S. Environmental Protection Agency, Office of Health and Environmental Assessment, Office of Research and Development.
- EPA. 1996. Master Testing List. Washington, DC: U.S. Environmental Protection Agency, Office of Pollution Prevention and Toxics. <https://nepis.epa.gov/Exe/ZyPURL.cgi?Dockey=910156U5.TXT>. February 22, 2018.
- EPA. 1997. Special report on environmental endocrine disruption: An effects assessment and analysis. Washington, DC: U.S. Environmental Protection Agency, Office of Pollution Prevention and Toxics.
- EPA. 1998a. Toxicological review of methylene diphenyl diisocyanate (MDI). Washington, DC: U.S. Environmental Protection Agency.
- EPA. 1998b. RCRA waste minimization PBT priority chemical list. *Fed Regist* 63 FR 60332. U. S. Environmental Protection Agency. <https://www.gpo.gov/fdsys/pkg/FR-1998-11-09/pdf/98-29952.pdf#page=1>. February 26, 2018.
- EPA. 2005. Toxic chemical release inventory reporting forms and instructions: Revised 2004 version. Section 313 of the Emergency Planning and Community Right-to-Know Act (Title III of the Superfund Amendments and Reauthorization Act of 1986). U.S. Environmental Protection Agency, Office of Environmental Information.
- *EPA. 2009a. Drinking water contaminant candidate list. U.S. Environmental Protection Agency. *Fed Regist* 74 FR 51850:51850 -51862. <http://www.gpo.gov/fdsys>. January 08, 2014.

9. REFERENCES

- EPA. 2009b. National primary drinking water regulations. Washington, DC: U.S. Environmental Protection Agency, Office of Ground Water and Drinking Water. EPA816F090004. https://www.epa.gov/sites/production/files/2016-06/documents/npwdr_complete_table.pdf. September 7, 2017.
- EPA. 2010. Benzene, 1,1'-methylenebis[4-isocyanato- (CAS: 101-68-8), benzene, 2,4-diisocyanato-1-methyl- (CAS: 584-84-9), benzene, 1,3-diisocyanato-2-methyl- (CAS: 91-08-7). Inventory update reporting (IUR). Non-confidential 2006 IUR company/chemical records. U.S. Environmental Protection Agency. <http://cfpub.epa.gov/iursearch/>. May 29, 2014.
- EPA. 2011a. Methylene diiphenyl diisocyanate (MDI) and related compounds. Action plan. U.S. Environmental Protection Agency. <http://www.epa.gov/oppt/existingchemicals/pubs/actionplans/mdi.pdf>. May 30, 2014.
- EPA. 2011b. Toluene diisocyanate (TDI) and related compounds. Action plan. U.S. Environmental Protection Agency. <http://www.epa.gov/oppt/existingchemicals/pubs/actionplans/tdi.pdf>. May 30, 2014.
- EPA. 2012. Drinking water standards and health advisories. Washington, DC: U.S. Environmental Protection Agency, Office of Water. EPA822S12001. <https://www.epa.gov/sites/production/files/2015-09/documents/dwstandards2012.pdf>. April 25, 2013.
- EPA. 2015. Technical support document. EPA's 2011 National-scale air toxics assessment. 2011 NATA TSD. Research Triangle Park, NC: U.S. Environmental Protection Agency, Office of Air Quality, Planning, and Standards.
- EPA. 2016a. Acute Exposure Guideline Levels (AEGLs) values. U.S. Environmental Protection Agency. https://www.epa.gov/sites/production/files/2016-03/documents/compiled_aegl_update_.pdf. September 8, 2017.
- EPA. 2016b. Drinking water contaminant candidate list. Fed Regist 81 FR 81099. U.S. Environmental Protection Agency. <https://www.gpo.gov/fdsys/pkg/FR-2016-11-17/pdf/2016-27667.pdf#page=1>. February 26, 2018.
- EPA. 2016c. Part A - Air quality and emission limitations. Hazardous air pollutants. United States Code 42 USC 7412. U.S. Environmental Protection Agency. <https://www.gpo.gov/fdsys/pkg/USCODE-2016-title42/pdf/USCODE-2016-title42-chap85-subchapI-partA-sec7412.pdf>. February 21, 2018.
- EPA. 2017a. Assessing outdoor air near schools. Roland-Story High School- Story City, IA. U.S. Environmental Protection Agency. <https://www3.epa.gov/air/sat/RolandStorResults.html>. August 03, 2017.
- EPA. 2017b. Designation of hazardous substances. Code of Federal Regulations. 40 CFR 116.4. U.S. Environmental Protection Agency. <https://www.gpo.gov/fdsys/pkg/CFR-2017-title40-vol24/pdf/CFR-2017-title40-vol24-sec116-4.pdf>. February 26, 2018.
- EPA. 2017c. Identification and listing of hazardous waste. Hazardous constituents. Code of Federal Regulations. 40 CFR 261, Appendix VIII. U.S. Environmental Protection Agency. <https://www.gpo.gov/fdsys/pkg/CFR-2017-title40-vol28/pdf/CFR-2017-title40-vol28-part261.pdf>. February 22, 2018.

9. REFERENCES

EPA. 2017d. Reportable quantities of hazardous substances designated pursuant to section 311 of the Clean Water Act. Code of Federal Regulations. 40 CFR 117.3. U.S. Environmental Protection Agency. <https://www.gpo.gov/fdsys/pkg/CFR-2017-title40-vol24/pdf/CFR-2017-title40-vol24-sec117-3.pdf>. February 26, 2018.

EPA. 2017e. Standards for owners and operators of hazardous waste TSD facilities. Groundwater monitoring list. Code of Federal Regulations. 40 CFR 264, Appendix IX. U.S. Environmental Protection Agency. <https://www.gpo.gov/fdsys/pkg/CFR-2017-title40-vol28/pdf/CFR-2017-title40-vol28-part264-appIX.pdf>. February 26, 2018.

EPA. 2017f. Superfund, emergency planning, and community right-to-know programs. Designation of hazardous substances. Code of Federal Regulations. 40 CFR 302.4. U.S. Environmental Protection Agency. <https://www.gpo.gov/fdsys/pkg/CFR-2017-title40-vol30/pdf/CFR-2017-title40-vol30-sec302-4.pdf>. February 26, 2018.

EPA. 2017g. Superfund, emergency planning, and community right-to-know programs. Toxic chemical release reporting. Subpart D - Specific toxic chemical listings. Code of Federal Regulations. 40 CFR 372.65. U.S. Environmental Protection Agency. <https://www.gpo.gov/fdsys/pkg/CFR-2017-title40-vol30/pdf/CFR-2017-title40-vol30-sec372-65.pdf>. February 26, 2018.

EPA. 2017h. Superfund, emergency planning, and community right-to-know programs. Extremely hazardous substances and their threshold planning quantities. Code of Federal Regulations. 40 CFR 355, Appendix A. U.S. Environmental Protection Agency. <https://www.gpo.gov/fdsys/pkg/CFR-2017-title40-vol30/pdf/CFR-2017-title40-vol30-part355-appA.pdf>. February 26, 2018.

EPA. 2017i. Toxic Substances Control Act. Chemical lists and reporting periods. Code of Federal Regulations. 40 CFR 712.30. U.S. Environmental Protection Agency. <https://www.gpo.gov/fdsys/pkg/CFR-2017-title40-vol33/pdf/CFR-2017-title40-vol33-sec712-30.pdf>. February 26, 2018.

EPA. 2017j. Toxic Substances Control Act. Health and safety data reporting. Subpart B - Specific chemical listings. Substances and listed mixtures to which this subpart applies. Code of Federal Regulations. 40 CFR 716.120. U.S. Environmental Protection Agency. <https://www.gpo.gov/fdsys/pkg/CFR-2017-title40-vol33/pdf/CFR-2017-title40-vol33-sec716-120.pdf>. February 26, 2018.

EPA. 2018a. About Acute Exposure Guideline Levels (AEGs). U.S. Environmental Protection Agency. <https://www.epa.gov/aegl/about-acute-exposure-guideline-levels-aegs>. February 26, 2018.

EPA. 2018b. National ambient air quality standards (NAAQS). U.S. Environmental Protection Agency. <https://www.epa.gov/criteria-air-pollutants/naaqs-table>. February 21, 2018.

EPA. 2018c. National recommended water quality criteria - Human health criteria table. U.S. Environmental Protection Agency. <https://www.epa.gov/wqc/national-recommended-water-quality-criteria-human-health-criteria-table>. February 26, 2018.

Fabbri LM, Boschetto P, Zocca E, et al. 1987. Bronchoalveolar neutrophilia during late asthmatic reactions induced by toluene diisocyanate. *Am Rev Respir Dis* 136(1):36-42.

9. REFERENCES

- FDA. 2013. Everything added to food in the United States (EAFUS). Washington, DC: U.S. Food and Drug Administration. <http://www.accessdata.fda.gov/scripts/fcn/fcnavigation.cfm?rpt=eafuslisting>. January 8, 2014.
- FDA. 2017. Subpart B - Requirements for specific standardized beverages. Bottled water. U.S. Food and Drug Administration. Code of Federal Regulations. 21 CFR 165.110
- Feron VJ, Kittel B, Kuper CF, et al. 2001. Chronic pulmonary effects of respirable methylene diphenyl diisocyanate (MDI) aerosol in rats: Combination of findings from two bioassays. *Arch Toxicol* 75(3):159-175.
- Fomon SJ. 1966. Body composition of the infant: Part 1: The male reference infant. In: Faulkner F, ed. *Human development*. Philadelphia, PA: WB Saunders, 239-246.
- Fomon SJ, Haschke F, Ziegler EE, et al. 1982. Body composition of reference children from birth to age 10 years. *Am J Clin Nutr* 35(Suppl 5):1169-1175.
- Fouremant P, Mason JM, Valencia R, et al. 1994. Chemical mutagenesis testing in *Drosophila*. X. Results of 70 coded chemicals tested for the National Toxicology Program. *Environ Mol Mutagen* 23(3):208-227.
- Furusho S, Myou S, Fujimura M, et al. 2006. Role of intercellular adhesion molecule-1 in a murine model of toluene diisocyanate-induced asthma. *Clin Exp Allergy* 36(10):1294-1302.
- Gagnaire F, Ban M, Micillino JC, et al. 1996. Bronchial responsiveness and inflammation in guinea pigs exposed to toluene diisocyanate: A study on single and repeated exposure. *Toxicology* 114(2):91-100.
- Geens T, Dugardin S, Schockaert A, et al. 2012. Air exposure assessment of TDI and biological monitoring of TDA in urine in workers in polyurethane foam industry. *Occup Environ Med* 69(2):93-98.
- Gilbert DS. 1988. Fate of TDI and MDI in air, soil, and water. *J Cell Plast* 24:178-192.
- Giwercman A, Carlsen E, Keiding N, et al. 1993. Evidence for increasing incidence of abnormalities of the human testis: A review. *Environ Health Perspect* 101(2):65-71.
- Gledhill A, Wake A, Hext P, et al. 2005. Absorption, distribution, metabolism and excretion of an inhalation dose of [¹⁴C] 4,4'-methylene diphenyl diisocyanate in the male rat. *Xenobiotica* 35(3):273-292.
- Gordon T, Sheppard D, McDonald DM, et al. 1985. Airway hyperresponsiveness and inflammation induced by toluene diisocyanate in guinea pigs. *Am Rev Respir Dis* 132(5):1106-1112.
- Gries W, Leng G. 2013. Analytical determination of specific 4,4'-methylene diphenyl diisocyanate hemoglobin adducts in human blood. *Anal Bioanal Chem* 405(23):7205-7213.
- Gui W, Wisniewski AV, Neamtiu I, et al. 2014. Inception cohort study of workers exposed to toluene diisocyanate at a polyurethane foam factory: Initial one-year follow-up. *Am J Ind Med* 57(11):1207-1215. 10.1002/ajim.22385.
- Gulati DK, Witt K, Anderson B, et al. 1989. Chromosome aberration and sister chromatid exchange tests in Chinese hamster ovary cells *in vitro*. III. Results with 27 chemicals. *Environ Mol Mutagen* 13(2):133-193.

9. REFERENCES

- Guzelian PS, Henry CJ, Olin SS, eds. 1992. Similarities and differences between children and adults: Implications for risk assessment. Washington, DC: International Life Sciences and Press Institute Press.
- Hagmar L, Stromberg U, Welinder H, et al. 1993a. Incidence of cancer and exposure to toluene diisocyanate and methylene diphenyldiisocyanate - A cohort based case-referent study in the polyurethane foam manufacturing industry. *Br J Ind Med* 50(11):1003-1007.
- Hagmar L, Welinder H, Mikoczy Z. 1993b. Cancer incidence and mortality in the Swedish polyurethane foam manufacturing industry. *Br J Ind Med* 50(6):537-543.
- Heimbach F, Jaeger K, Sporenberg W. 1996. Fate and biological effects of polymeric MDI (4,4'-diphenylmethane diisocyanate and homologs) in small artificial ponds. *Ecotoxicol Environ Saf* 33(2):143-153.
- Helaskoski E, Suolahto H, Kuuliala O, et al. 2015. Prick testing with chemicals in the diagnosis of occupational contact urticaria and respiratory diseases. *Contact Dermatitis* 72(1):20-32.
- Henriks-Eckerman ML, Makela EA, Laitinen J, et al. 2015. Role of dermal exposure in systemic intake of methylenediphenyl diisocyanate (MDI) among construction and boat building workers. *Toxicol Lett* 232(3):595-600. 10.1016/j.toxlet.2014.12.012.
- Herbold B, Haas P, Seel K, et al. 1998. Studies on the effect of the solvents dimethylsulfoxide and ethyleneglycoldimethylether on the mutagenicity of four types of diisocyanates in the Salmonella/microsome test. *Mutat Res* 412(2):167-175.
- Hoel DG, Davis DL, Miller AB, et al. 1992. Trends in cancer mortality in 15 industrialized countries, 1969-1986. *J Natl Cancer Inst* 84(5):313-320.
- Hoffmann HD, Leibold E, Ehnes C, et al. 2010. Dermal uptake and excretion of ¹⁴C-toluene diisocyanate (TDI) and ¹⁴C-methylene diphenyl diisocyanate (MDI) in male rats. Clinical signs and histopathology following dermal exposure of male rats to TDI. *Toxicol Lett* 199(3):364-371.
- Holdren MW, Spicer CW, Riggin RM. 1984. Gas phase reaction of toluene diisocyanate with water vapor. *Am Ind Hyg Assoc J* 45(9):626-633.
- Holmén A, Åkesson B, Hansén L, et al. 1988. Comparison among five mutagenicity assays in workers producing polyurethane foams. *Int Arch Occup Environ Health* 60(3):175-179.
- HSDB. 2012. Toluene diisocyanates. Hazardous Substances Data Bank. National Library of Medicine. <http://toxnet.nlm.nih.gov>. September 10, 2014.
- Huang J, Wang XP, Chen BM, et al. 1991b. Immunological effects of toluene diisocyanate exposure on painters. *Arch Environ Contam Toxicol* 21(4):607-611.
- Huang J, Wang XP, Ueda A, et al. 1991a. Allergologic evaluation for workers exposed to toluene diisocyanate. *Ind Health* 29(3):85-92.
- Hughes MA, Carson M, Collins MA, et al. 2014. Does diisocyanate exposure result in neurotoxicity? *Clin Toxicol* 52:242-257.

9. REFERENCES

- Hur GY, Kim SH, Park SM, et al. 2009. Tissue transglutaminase can be involved in airway inflammation of toluene diisocyanate-induced occupational asthma. *J Clin Immunol* 29(6):786-794.
- Hur GY, Koh DH, Choi GS, et al. 2008. Clinical and immunologic findings of methylene diphenyl diisocyanate-induced occupational asthma in a car upholstery factory. *Clin Exp Allergy* 38(4):586-593.
- IARC. 1985. Toluene diisocyanate. In: IARC monographs on the evaluation of carcinogenic risk of chemicals to humans. Vol 39. Some chemicals used in plastics and elastomers. In: Lyon, France: International Agency for Research on Cancer, 287-323.
- IARC. 1999a. 4,4'-Methylenediphenyl diisocyanate and polymeric 4,4'- methylenediphenyl diisocyanate. IARC Monographs on the evaluation of carcinogenic risks to humans. Volume 71. Re-evaluation of some organic chemicals, hydrazine and hydrogen peroxide. Part 3A. Lyon, France: International Agency for Research on Cancer. <http://monographs.iarc.fr/ENG/Monographs/vol71/mono71-47.pdf>. February 21, 2018.
- IARC. 1999b. Toluene diisocyanates. IARC Monographs on the evaluation of carcinogenic risks to humans. Volume 71. Re-evaluation of some organic chemicals, hydrazine and hydrogen peroxide. Part 2. Lyon, France: International Agency for Research on Cancer. <http://monographs.iarc.fr/ENG/Monographs/vol71/mono71-37.pdf>. February 21, 2018.
- *IARC. 2014. Agents classified by the IARC monographs. Volumes 1-109. Lyon, France: International Agency for Research on Cancer. <http://monographs.iarc.fr/ENG/Classification/index.php>. May 15, 2014.
- International Isocyanate Institute. 1983. Biodegradability and toxicity bioassays of isocyanates and amines. Submitted to the U.S. Environmental Protection Agency under TSCA, Section 8d. OTS0515179. EPA8687000652.
- International Isocyanate Institute. 1987. Reactions of OH radicals with toluene diisocyanate, toluene diamine, and methylene dianiline under simulated atmosphere. Submitted to the U.S. Environmental Protection Agency under TSCA, Section 8d. OTS0515193. EPA8687000666.
- International Isocyanate Institute. 1980. Biodegradation of toluene diisocyanate and diphenyl methane diisocyanate. Submitted to the U.S. Environmental Protection Agency under TSCA, Section 8d. OTS0515172. EPA8687000646.
- IRIS. 2002. Methylene diphenyl diisocyanate (monomeric MDI) and polymeric MDI (PMDI) (CASRN 101-68-8, 9016-87-9). Integrated Risk Information System. Chemical assessment summary. Washington, DC: U.S. Environmental Protection Agency. https://cfpub.epa.gov/ncea/iris/iris_documents/documents/subst/0529_summary.pdf. February 22, 2018.
- IRIS. 2003. 2,4-/2,6-Toluene diisocyanate mixture (TDI) (CASRN 26471-62-5). Integrated Risk Information System. Chemical assessment summary. Washington, DC: U.S. Environmental Protection Agency. https://cfpub.epa.gov/ncea/iris/iris_documents/documents/subst/0503_summary.pdf. February 22, 2018.
- Jang AS, Choi IS, Koh YI, et al. 2000. Increase in airway hyperresponsiveness among workers exposed to methylene diphenyldiisocyanate compared to workers exposed to toluene diisocyanate at a petrochemical plant in Korea. *Am J Ind Med* 37(6):663-667.

9. REFERENCES

- Ji Y, Ji C, Lang L, et al. 2008. The effects of TDI on mice marrow cells. *IEEEExplore. Digital Library*, 4570-4572.
- Johnson VJ, Yucesoy B, Luster MI. 2005. Prevention of IL-1 signaling attenuates airway hyperresponsiveness and inflammation in a murine model of toluene diisocyanate-induced asthma. *J Allergy Clin Immunol* 116(4):851-858.
- Johnson VJ, Yucesoy B, Reynolds JS, et al. 2007. Inhalation of toluene diisocyanate vapor induces allergic rhinitis in mice. *J Immunol* 179(3):1864-1871.
- Jolly AT, Klees JE, Pacheco KA, et al. 2015. Work-related asthma. *J Occup Environ Med* 57(10):e121-e129.
- Jones RN, Rando RJ, Glindmeyer HW, et al. 1992. Abnormal lung function in polyurethane foam producers. Weak relationship to toluene diisocyanate exposures. *Am Rev Respir Dis* 146(4):871-877.
- Kaaria K, Hirvonen A, Norppa H, et al. 2001a. Exposure to 2,4- and 2,6-toluene diisocyanate (TDI) during production of flexible foam: Determination of airborne TDI and urinary 2,4- and 2,6-toluenediamine (TDA). *Analyst* 126(7):1025-1031.
- Kaaria K, Hirvonen A, Norppa H, et al. 2001b. Exposure to 4,4'-methylenediphenyl diisocyanate (MDI) during molding of rigid polyurethane foam: Determination of airborne MDI and urinary 4,4'-methylenedianiline (MDA). *Analyst* 126(4):476-479.
- Karlsson D, Spanne M, Dalene M, et al. 2000. Airborne thermal degradation products of polyurethane coatings in car repair shops. *J Environ Monit* 2(5):462-469.
- *Karol MH, Hauth BA, Riley EJ, et al. 1981. Dermal contact with toluene diisocyanate (TDI) produces respiratory tract hypersensitivity in guinea pigs. *Toxicol Appl Pharmacol* 58(2):221-230.
- Kearns GL, Abdel-Rahman SM, Alander SW, et al. 2003. Developmental pharmacology--drug disposition, action, and therapy in infants and children. *N Engl J Med* 349(12):1157-1167.
- Kelly TJ, Mukund R, Spicer CW, et al. 1994. Concentrations and transformations of hazardous air pollutants. *Environ Sci Technol* 28(8):378A-387A.
- Kelly TJ, Myers JD, Holdren MW. 1999. Testing of household products and materials for emission of toluene diisocyanate. *Indoor Air* 9(2):117-124.
- Kennedy AL, Stock MF, Alarie Y, et al. 1989. Uptake and distribution of ¹⁴C during and following inhalation exposure to radioactive toluene diisocyanate. *Toxicol Appl Pharmacol* 100(2):280-292.
- Kennedy AL, Wilson TR, Stock MF, et al. 1994. Distribution and reactivity of inhaled ¹⁴C-labeled toluene diisocyanate (TDI) in rats. *Arch Toxicol* 68(7):434-443.
- Kim JH, Kim JE, Choi GS, et al. 2011. Serum cytokines markers in toluene diisocyanate-induced asthma. *Respir Med* 105(7):1091-1094.
- Kim SH, Cho BY, Park CS, et al. 2009. Alpha-T-catenin (CTNNA3) gene was identified as a risk variant for toluene diisocyanate-induced asthma by genome-wide association analysis. *Clin Exp Allergy* 39(2):203-212.

9. REFERENCES

- Kim SH, Choi GS, Nam YH, et al. 2012. Role of vitamin D-binding protein in isocyanate-induced occupational asthma. *Exp Mol Med* 44(5):319-329.
- Kim SH, Choi GS, Ye YM, et al. 2010. Toluene diisocyanate (TDI) regulates haem oxygenase-1/ferritin expression: Implications for toluene diisocyanate-induced asthma. *Clin Exp Immunol* 160(3):489-497
- Kim SH, Park HJ, Lee CM, et al. 2006. Epigallocatechin-3-gallate protects toluene diisocyanate-induced airway inflammation in a murine model of asthma. *FEBS Lett* 580(7):1883-1890.
- Komori M, Nishio K, Kitada M, et al. 1990. Fetus-specific expression of a form of cytochrome P-450 in human livers. *Biochemistry* 29(18):4430-4433.
- *Koschier FJ, Burden EJ, Brunkhorst CS, et al. 1983. Concentration-dependent elicitation of dermal sensitization in guinea pigs treated with 2,4-toluene diisocyanate. *Toxicol Appl Pharmacol* 67(3):401-407.
- Kouadio K, Zheng KC, Toure AA, et al. 2014. IL-4 and IL-5 secretions predominate in the airways of Wistar rats exposed to toluene diisocyanate vapor. *J Prev Med Public Health/ Yebang Uihakhoe chi* 47(1):57-63. 10.3961/jpmph.2014.47.1.57.
- Krishnan K, Anderson ME, Clewell HJ, et al. 1994. Physiologically based pharmacokinetic modeling of chemical mixtures. In: Yang RSH, ed. *Toxicology of chemical mixtures. Case studies, mechanisms, and novel approaches*. San Diego, CA: Academic Press, 399-437.
- Kumar A, Dongari N, Sabbioni G. 2009. New isocyanate-specific albumin adducts of 4,4'-methylenediphenyl diisocyanate (MDI) in rats. *Chem Res Toxicol* 22(12):1975-1983.
- Lee YM, Kim HA, Park HS, et al. 2003. Exposure to toluene diisocyanate (TDI) induces IL-8 production from bronchial epithelial cells: Effect of pro-inflammatory cytokines. *J Korean Med Sci* 18(6):809-812.
- Leeder JS, Kearns GL. 1997. Pharmacogenetics in pediatrics: Implications for practice. *Pediatr Clin North Am* 44(1):55-77.
- Leikin JB, Paloucek FP. 2008. Methylene diisocyanate and toluene diisocyanate. In: *Poisoning and toxicology handbook*. 4th ed. Boca Raton, FL: CRC Press, 824; 857-858.
- Lemiere C, Cartier A, Dolovich J, et al. 1996. Outcome of specific bronchial responsiveness to occupational agents after removal from exposure. *Am J Respir Crit Care Med* 154(2):329-333.
- Le Quesne PM, Axford AT, McKerrow CB, et al. 1976. Neurological complications after a single severe exposure to toluene di-isocyanate. *Br J Ind Med* 33(2):72-78.
- Lesage J, Stanley J, Karoly WJ, et al. 2007. Airborne methylene diphenyl diisocyanate (MDI) concentrations associated with the application of polyurethane spray foam in residential construction. *J Occup Environ Hyg* 4(2):145-155.
- Leung H. 1993. Physiologically-based pharmacokinetic modelling. In: Ballantyne B, Marrs T, Turner P, eds. *General and applied toxicology*. Vol. 1. New York, NY: Stockton Press, 153-164.

9. REFERENCES

- Levine SP, Hillig KJD, Dharmarajan V, et al. 1995. Critical review of methods of sampling, analysis, and monitoring for TDI and MDI. *Am Ind Hyg Assoc J* 56(6):581-589.
- Lewis RJ. 2004. Toluene-2,4-diisocyanate. In: *Sax's dangerous properties of industrial materials*. Vol. 3. 11 ed. Hoboken, NJ: John Wiley & Sons, 3484.
- *Lim RH, Arredouani MS, Fedulov A, et al. 2007. Maternal allergic contact dermatitis causes increased asthma risk in offspring. *Respir Res* 8:56.
- Lind P, Dalene M, Skarping G, et al. 1996. Toxicokinetics of 2,4- and 2,6-toluenediamine in hydrolysed urine and plasma after occupational exposure to 2,4- and 2,6-toluene diisocyanate. *Occup Environ Med* 53(2):94-99.
- Lindberg HK, Korpi A, Santonen T, et al. 2011. Micronuclei, hemoglobin adducts and respiratory tract irritation in mice after inhalation of toluene diisocyanate (TDI) and 4,4'-methylenediphenyl diisocyanate (MDI). *Mutat Res* 723(1):1-10.
- Liss GM, Bernstein DI, Moller DR, et al. 1988. Pulmonary and immunologic evaluation of foundry workers exposed to methylene diphenyldiisocyanate (MDI). *J Allergy Clin Immunol* 82(1):55-61.
- Littorin M, Axmon A, Broberg K, et al. 2007. Eye and airway symptoms in low occupational exposure to toluene diisocyanate. *Scand J Work Environ Health* 33(4):280-285.
- Loeser E. 1983. Long-term toxicity and carcinogenicity studies with 2,4/2,6-toluene-diisocyanate (80/20) in rats and mice. *Toxicol Lett* 15(1):71-81.
- Luckenbach M, Kielar R. 1980. Toxic corneal epithelial edema from exposure to high atmospheric concentration of toluene diisocyanates. *Am J Ophthalmol* 90(5):682-686.
- Lushniak BD, Reh CM, Bernstein DI, et al. 1998. Indirect assessment of 4,4'-diphenylmethane diisocyanate (MDI) exposure by evaluation of specific humoral immune responses to MDI conjugated to human serum albumin. *Am J Ind Med* 33(5):471-477.
- Lyman WJ, Reehl WF, Rosenblatt DH. 1990. Rate of aqueous photolysis. In: *Handbook of chemical property estimation methods. Environmental behavior of organic compounds*. Washington, DC: American Chemical Society, 8-11 to 18-14.
- Maestrelli P, De Marzo N, Saetta M, et al. 1993. Effects of inhaled beclomethasone on airway responsiveness in occupational asthma - placebo-controlled study of subjects sensitized to toluene diisocyanate. *Am Rev Respir Dis* 148(2):407-412.
- Malo JL, Zeiss CR. 1982. Occupational hypersensitivity pneumonitis after exposure to diphenylmethane diisocyanate. *Am Rev Respir Dis* 125(1):113-116.
- Mapp C, Boschetto P, dal Vecchio L, et al. 1987. Protective effect of antiasthma drugs on late asthmatic reactions and increased airway responsiveness induced by toluene diisocyanate in sensitized subjects. *Am Rev Respir Dis* 136(6):1403-1407.
- Mapp CE, Corona PC, De Marzo N, et al. 1988. Persistent asthma due to isocyanates. A follow-up study of subjects with occupational asthma due to toluene diisocyanate (TDI). *Am Rev Respir Dis* 137(6):1326-1329.

9. REFERENCES

- Mapp CE, Lucchini RE, Miotto D, et al. 1998. Immunization and challenge with toluene diisocyanate decrease tachykinin and calcitonin gene-related peptide immunoreactivity in guinea pig central airways. *Am J Respir Crit Care Med* 158(1):263-269.
- Marczynski B, Merget R, Mensing T, et al. 2005. DNA strand breaks in the lymphocytes of workers exposed to diisocyanates: Indications of individual differences in susceptibility after low-dose and short-term exposure. *Arch Toxicol* 79(6):355-362.
- Marek W, Potthast J, Marczynski B, et al. 1999. Subchronic exposure to diisocyanates increases guinea pig tracheal smooth muscle responses to acetylcholine. *Respiration* 66(2):156-161.
- Matheson JM, Johnson VJ, Vallyathan V, et al. 2005. Exposure and immunological determinants in a murine model for toluene diisocyanate (TDI) asthma. *Toxicol Sci* 84(1):88-98.
- Matheson JM, Lemus R, Lange RW, et al. 2002. Role of tumor necrosis factor in toluene diisocyanate asthma. *Am J Respir Cell Mol Biol* 27(4):396-405.
- McGregor DB, Brown AG, Howgate S, et al. 1991. Responses of the L5178Y mouse lymphoma cell forward mutation assay. V: 27 Coded chemicals. *Environ Mol Mutagen* 17(3):196-219.
- Meyer SD, Tallman DE. 1983. The determination of toluene diisocyanate in air by high-performance liquid chromatography with electrochemical detection. *Anal Chim Acta* 146:227-236.
- Mikoczy Z, Welinder H, Tinnerberg H, et al. 2004. Cancer incidence and mortality of isocyanate exposed workers from the Swedish polyurethane foam industry: Updated findings 1959-98. *Occup Environ Med* 61(5):432-437.
- MMWR. 1998. Community exposure to toluene diisocyanate from a polyurethane foam manufacturing plant- North Carolina, 1997. U.S. Department of Health and Human Services, Centers for Disease Control. *Morbidity and Mortality Weekly Report* 47(22):455-457.
- Moller DR, Brooks SM, McKay RT, et al. 1986. Chronic asthma due to toluene diisocyanate. *Chest* 90(4):494-499.
- Morselli PL, Franco-Morselli R, Bossi L. 1980. Clinical pharmacokinetics in newborns and infants: Age-related differences and therapeutic implications. *Clin Pharmacokinet* 5(6):485-527.
- Moscato G, Dellabianca A, Vinci G, et al. 1991. Toluene diisocyanate-induced asthma: Clinical findings and bronchial responsiveness studies in 113 exposed subjects with work-related respiratory symptoms. *J Occup Med* 33(6):720-725.
- Musk AW, Peters JM, Diberardinis L, et al. 1982. Absence of respiratory effects in subjects exposed to low concentrations of toluene diisocyanate and diphenylmethyldiisocyanate. *J Occup Med* 24(10):746-750.
- NAS/NRC. 1989. Report of the oversight committee. Biologic markers in reproductive toxicology. Washington, DC: National Academy of Sciences, National Research Council, National Academy Press, 15-35.

9. REFERENCES

- *NAS/NRC. 2004. Toluene 2,4- and 2,6-diisocyanate. Acute exposure guideline levels. In: Acute guideline levels for selected airborne chemicals: Volume 4. Washington, DC: National Academy of Sciences, National Research Council, National Academy Press, 198-249.
<http://www.nap.edu/catalog/10902/acute-exposure-guideline-levels-for-selected-airborne-chemicals-volume-4>. August 26, 2015.
- NCDHHS. 2017. NC community TDI report. North Carolina Department of Health and Human Services and Agency for Toxic Substances and Disease Registry.
- NIOSH. 1989. Current Intelligence Bulletin 53. Toluene diisocyanate (TDI) and toluenediamine (TDA): Evidence of carcinogenicity. National Institute of Occupational Safety and Health, Centers for Disease Control and Prevention. <http://www.cdc.gov/niosh/docs/90-101/>. December 31, 2013.
- NIOSH. 1994. Isocyanates, monomeric. Method 5521, Issue 2. NIOSH manual of analytical methods (NMAM), Fourth edition. National Institute of Occupational Safety and Health.
<http://www.cdc.gov/niosh/docs/2003-154/pdfs/5521.pdf>. May 30, 2014.
- NIOSH. 1996. Isocyanates. Method 5522, Issue 1. NIOSH manual of analytical methods (NMAM). Fourth edition. National Institute of Occupational Safety and Health.
<http://www.cdc.gov/niosh/docs/2003-154/pdfs/5522.pdf>. May 30, 2014.
- NIOSH. 2003. Isocyanates, total (MAP). Method 5525, Issue 1. NIOSH Manual of Analytical Methods (NMAM). Fourth edition. National Institute of Occupational Safety and Health.
<http://www.cdc.gov/niosh/docs/2003-154/pdfs/5525.pdf>. May 30, 2014.
- NIOSH. 2006. NIOSH alert: Preventing asthma and death from MDI exposure during spray-on truck bed liner and related applications. National Institute of Occupational Safety and Health.
<http://www.cdc.gov/niosh/docs/2006-149/pdfs/2006-149.pdf>. May 30, 2014.
- NIOSH. 2016a. Methylene bisphenyl isocyanate. NIOSH pocket guide to chemical hazards. Atlanta, GA: National Institute for Occupational Safety and Health, Centers for Disease Control and Prevention.
<https://www.cdc.gov/niosh/npg/npgd0413.html>. February 22, 2018.
- NIOSH. 2016b. Toluene-2,4-diisocyanate. NIOSH pocket guide to chemical hazards. Atlanta, GA: National Institute for Occupational Safety and Health, Centers for Disease Control and Prevention.
<https://www.cdc.gov/niosh/npg/npgd0621.html>. February 22, 2018.
- Nordqvist Y, Nilsson U, Colmsjo A. 2005. Investigation of a cylindrical chemisorptive denuder for sampling and phase separation of toluene diisocyanate aerosols. *Anal Bioanal Chem* 382(5):1294-1299.
- NRC. 1993. Pesticides in the diets of infants and children. Washington, DC: National Research Council. National Academy Press.
- NTP. 1986. NTP Toxicology and carcinogenesis studies of commercial grade 2,4 (80%)- and 2,6 (20%)- toluene diisocyanate (CAS No. 26471-62-5) in F344/N rats and B6C3F1 mice (gavage studies). National Toxicology Program Tech Rep Ser 251:1-194.
- NTP. 2011. Toluene diisocyanates. Report on carcinogens, twelfth edition. National Toxicology Program, 414-416.

9. REFERENCES

- NTP. 2016. Toluene diisocyanates. Report on carcinogens, Fourteenth edition. Research Triangle Park, NC: U.S. Department of Health and Human Services, Public Health Service, National Toxicology Program. <https://ntp.niehs.nih.gov/ntp/roc/content/profiles/toluenediisocyanates.pdf>. February 22, 2018.
- Nuorteva P, Assmuth T, Haahtela T, et al. 1987. The prevalence of asthma among inhabitants in the vicinity of a polyurethane factory in Finland. *Environ Res* 43(2):308-316.
- O'Brien IM, Harries MG, Burge PS, et al. 1979. Toluene di-isocyanate-induced asthma. I. Reactions to TDI, MDI, HDI and histamine. *Clin Allergy* 9(1):1-6.
- Ogawa H, Inoue S, Ogushi F, et al. 2006. Toluene diisocyanate (TDI) induces production of inflammatory cytokines and chemokines by bronchial epithelial cells via the epidermal growth factor receptor and p38 mitogen-activated protein kinase pathways. *Exp Lung Res* 32(6):245-262.
- Olsen GW, Shellenberger R, Bodner KM, et al. 1989. An epidemiologic investigation of forced expiratory volume at 1 second and respiratory symptoms among employees of a toluene diisocyanate production plant. *J Occup Med* 31(8):664-667.
- Omae K, Higashi T, Nakadate T, et al. 1992. Four-year follow-up of effects of toluene diisocyanate exposure on the respiratory system in polyurethane foam manufacturing workers. II. Four-year changes in the effects on the respiratory system. *Int Arch Occup Environ Health* 63(8):565-569.
- OSHA. 1980. Diisocyanates. 2,4-TDI and MDI. Method No. 18. Sampling and analytical methods. Occupational Safety and Health Administration. <https://www.osha.gov/dts/sltc/methods/organic/org018/org018.html>. December 17, 2013.
- OSHA. 1989a. Diisocyanates. 1,6-hexamethylene diisocyanate (HDI), toluene-2,6-diisocyanate (2,6-TDI), and toluene-2,4-diisocyanate (2,4-TDI). Organic method #042. Sampling and analytical methods. Occupational Safety and Health Administration. <https://www.osha.gov/dts/sltc/methods/organic/org042/org042.html>. December 17, 2013.
- OSHA. 1989b. Methylene bisphenyl isocyanate (MDI). Organic method #047. Sampling and analytical methods. Occupational Safety and Health Administration. <https://www.osha.gov/dts/sltc/methods/organic/org047/org047.html>. December 17, 2013.
- OSHA. 1992. Report on occupational safety and health for fiscal year 1990 (under Public Law 91-596). Occupational Safety and Health Administration. https://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=oshact&p_id=2743. January 21, 2014.
- OSHA. 2017a. Subpart H - Hazardous materials. Process safety management of highly hazardous chemicals. Code of Federal Regulations. 29 CFR 1910.119. Occupational Safety and Health Standards. <https://www.gpo.gov/fdsys/pkg/CFR-2017-title29-vol5/pdf/CFR-2017-title29-vol5-sec1910-119.pdf>. February 22, 2018.
- OSHA. 2017b. Subpart Z - Toxic and hazardous substances. Air contaminants. Code of Federal Regulations. 29 CFR 1910.1000. Occupational Safety and Health Standards. <https://www.gpo.gov/fdsys/pkg/CFR-2017-title29-vol6/pdf/CFR-2017-title29-vol6-sec1910-1000.pdf>. January 10, 2018.

9. REFERENCES

- Ott MG, Diller WF, Jolly AT. 2003. Respiratory effects of toluene diisocyanate in the workplace: A discussion of exposure-response relationships. *Crit Rev Toxicol* 33(1):1-59.
- Ott MG, Jolly AT, Burkett AL, et al. 2007. Issues in diisocyanate antibody testing. *Crit Rev Toxicol* 37:567-585.
- Ott MG, Klees JE, Poche SL. 2000. Respiratory health surveillance in a toluene di-isocyanate production unit, 1967-97: Clinical observations and lung function analyses. *Occup Environ Med* 57(1):43-52.
- Owen GM, Brozek J. 1966. Influence of age, sex and nutrition on body composition during childhood and adolescence. In: Falkner F, ed. *Human development*. Philadelphia, PA: WB Saunders, 222-238.
- Padoan M, Pozzato V, Simoni M, et al. 2003. Long-term follow-up of toluene diisocyanate-induced asthma. *Eur Respir J* 21(4):637-640.
- Paggiaro P, Bacci E, Talini D, et al. 1987. Atropine does not inhibit late asthmatic responses induced by toluene-diisocyanate in sensitized subjects. *Am Rev Respir Dis* 136(5):1237-1241.
- Paggiaro PL, Innocenti A, Bacci E, et al. 1986. Specific bronchial reactivity to toluene diisocyanate: Relationship with baseline clinical findings. *Thorax* 41(4):279-282.
- Paggiaro PL, Loi AM, Rossi O, et al. 1984. Follow-up study of patients with respiratory disease due to toluene diisocyanate (TDI). *Clin Allergy* 14(5):463-469.
- Paggiaro PL, Vagaggini B, Dente FL, et al. 1993. Bronchial hyperresponsiveness and toluene diisocyanate. Long-term change in sensitized asthmatic subjects. *Chest* 103(4):1123-1128.
- Palikhe NS, Kim JH, Park HS. 2011. Biomarkers predicting isocyanate-induced asthma. *Allergy Asthma Immunol Res* 3(1):21-26.
- Park HS, Nahm DH. 1996. Isocyanate-induced occupational asthma: Challenge and immunologic studies. *J Korean Med Sci* 11(4):314-318.
- Park HS, Nahm DH. 1997. Prognostic factors for toluene diisocyanate-induced occupational asthma after removal from exposure. *Clin Exp Allergy* 27(10):1145-1150.
- Park HS, Kim HY, Nahm DH, et al. 1999. Specific IgG, but not specific IgE, antibodies to toluene diisocyanate-human serum albumin conjugate are associated with toluene diisocyanate bronchoprovocation test results. *J Allergy Clin Immunol* 104(4 Pt 1):847-851.
- Pauluhn J. 2014. Development of a respiratory sensitization/elicitation protocol of toluene diisocyanate (TDI) in Brown Norway rats to derive an elicitation-based occupational exposure level. *Toxicology* 319:10-22. 10.1016/j.tox.2014.02.006.
- Pauluhn J, Gollapudi B, Hammond T, et al. 2001. Bone marrow micronucleus assay in Brown-Norway rats exposed to diphenyl-methane-4,4'-diisocyanate. *Arch Toxicol* 75(4):234-242.
- Peters JM, Murphy RL, Pagnotto LD, et al. 1968. Acute respiratory effects in workers exposed to low levels of toluene diisocyanate (TDI). *Arch Environ Health* 16(5):642-647.

9. REFERENCES

- Peters JM, Murphy RL, Pagnotto LD, et al. 1970. Respiratory impairment in workers exposed to "safe" levels of toluene diisocyanate (TDI). *Arch Environ Health* 20(3):364-367.
- Petsonk EL, Wang ML, Lewis DM, et al. 2000. Asthma-like symptoms in wood product plant workers exposed to methylene diphenyl diisocyanate. *Chest* 118(4):1183-1193.
- Pezzini A, Riviera A, Paggiaro P, et al. 1984. Specific IgE antibodies in twenty-eight workers with diisocyanate-induced bronchial asthma. *Clin Allergy* 14(5):453-461.
- Pham LD, Kim MA, Yoon MG, et al. 2014. Serum specific IgG response to toluene diisocyanate-tissue transglutaminase conjugate in toluene diisocyanate-induced occupational asthmatics. *Ann Allergy, Asthma Immunol* 113(1):48-54. 10.1016/j.anai.2014.04.022.
- Pollaris L, Devos F, De Vooght V, et al. 2016. Toluene diisocyanate and methylene diphenyl diisocyanate: Asthmatic response and cross-reactivity in a mouse model. *Arch Toxicol* 90:1709-1717. 10.1007/s00204-015-1606-6.
- Pons F, Haag M, Corcos L, et al. 2000. Inhalation of toluene diisocyanate affects cytochrome P450 2B1 expression in rat lung. *Arch Toxicol* 74(7):397-403.
- Rando RJ, Poovey HG. 1994. Dichotomous sampling of vapor and aerosol of methylene-bis-(phenylisocyanate) (MDI) with an annular diffusional denuder. *Am Ind Hyg Assoc J* 55(8):716-721.
- Rastogi SC. 1989. Analysis of diisocyanate monomers in chemical products containing polyurethanes by high pressure liquid chromatography. *Chromatographia* 28(1-2):15-18.
- Renman L, Sango C, Skarping G. 1986. Determination of isocyanate and aromatic amine emissions from thermally degraded polyurethanes in foundries. *Am Ind Hyg Assoc J* 47(10):621-628.
- RePORTER. 2014. Diisocyanates. National Institutes of Health, Research Portfolio Online Reporting Tools. <http://projectreporter.nih.gov/reporter.cfm>. April 7, 2014.
- Reuzel PGJ, Arts JH, Lomax LG, et al. 1994. Chronic inhalation toxicity and carcinogenicity study of respirable polymeric methylene diphenyl diisocyanate (polymeric MDI) aerosol in rats. *Fundam Appl Toxicol* 22(2):195-210.
- Rosenberg C, Savolainen H. 1986a. Determination in urine of diisocyanate-derived amines from occupational exposure by gas chromatography-mass fragmentography. *Analyst* 111(9):1069-1071.
- Rosenberg C, Savolainen H. 1986b. Determination of occupational exposure to toluene diisocyanate by biological monitoring. *J Chromatogr* 367(2):385-392.
- RTECS. 2009a. Isocyanic acid, methylenedi-p-phenylene ester. RTECS #: NQ9350000. National Institute for Occupational Safety and Health. Registry of Toxic Effects of Chemical Substances. RTECS: NQ9350000. <http://www.cdc.gov/niosh-rtecs/NQ8EAB70.html>. December 30, 2013.
- RTECS. 2009b. Benzene, 2,3-diisocyanato-1-methyl-. RTECS # CZ6300000. National Institute for Occupational Safety and Health. Registry of Toxic Effects of Chemical Substances. <http://www.cdc.gov/niosh-rtecs/CZ602160.html>. December 31, 2014.

9. REFERENCES

- RTECS. 2009c. Benzene, 2,6-diisocyanato-1 methyl-. RTECS #: CZ6310000. National Institute for Occupational Safety and Health. Registry of Toxic Effects of Chemical Substances. <http://www.cdc.gov/niosh-rtecs/cz604870.html>. December 31, 2013.
- Sabbioni G, Dongari N, Kumar A. 2010. Determination of a new biomarker in subjects exposed to 4,4'-methylenediphenyl diisocyanate. *Biomarkers* 15(6):508-515.
- Sabbioni G, Gu Q, Vanimireddy LR. 2012. Determination of isocyanate specific albumin-adducts in workers exposed to toluene diisocyanates. *Biomarkers* 17(2):150-159.
- Sabbioni G, Wesp H, Lewalter J, et al. 2007. Determination of isocyanate biomarkers in construction site workers. *Biomarkers* 12(5):468-483.
- Saetta M, Maestrelli P, Turato G, et al. 1995. Airway wall remodeling after cessation of exposure to isocyanates in sensitized asthmatic subjects. *Am J Respir Crit Care Med* 151(2 Pt 1):489-494.
- Sangha GK, Alarie Y. 1979. Sensory irritation by toluene diisocyanate in single and repeated exposures. *Toxicol Appl Pharmacol* 50(3):533-547.
- Saunders NR, Ek CJ, Habgood MD, et al. 2008. Barriers in the brain: A renaissance? *Trends Neurosci* 31(6):279-286.
- Saunders NR, Liddelow SA, Dziegielewska KM. 2012. Barrier mechanisms in the developing brain. *Front Pharmacol* 3(10.3389/fphar.2012.00046):Article 46.
- Scheuplein R, Charnley G, Dourson M. 2002. Differential sensitivity of children and adults to chemical toxicity. I. Biological basis. *Regul Toxicol Pharmacol* 35(3):429-447.
- Schmidt-Nowara WW, Murphy RL, Atkinson JD. 1973. Lung function after acute toluene di-isocyanate inhalation. *Chest* 63(6):1039-1040.
- Schnorr TM, Steenland K, Egeland GM, et al. 1996. Mortality of workers exposed to toluene diisocyanate in the polyurethane foam industry. *Occup Environ Med* 53(10):703-707.
- Schutze D, Sepai O, Lewalter J, et al. 1995. Biomonitoring of workers exposed to 4,4'-methylenedianiline or 4,4'-methylenediphenyl diisocyanate. *Carcinogenesis* 16(3):573-582.
- Seel K, Walber U, Herbold B, et al. 1999. Chemical behaviour of seven aromatic diisocyanates (toluenediisocyanates and diphenylmethanediisocyanates) under *in vitro* conditions in relationship to their results in the Salmonella/microsome test. *Mutat Res* 438(2):109-123.
- Sendjarevic V, Sendjarevic A, Sendjarevic I, et al. 2004. Hydrolytic stability of toluene diisocyanate and polymeric methylenediphenyl diisocyanate based polyureas under environmental conditions. *Environ Sci Technol* 38(4):1066-1072.
- Sennbro CJ, Lindh CH, Mattsson C, et al. 2006. Biological monitoring of exposure to 1,5-naphthalene diisocyanate and 4,4'-methylenediphenyl diisocyanate. *Int Arch Occup Environ Health* 79(8):647-653.

9. REFERENCES

- Sennbro CJ, Lindh CH, Tinnerberg H, et al. 2003. Development, validation and characterization of an analytical method for the quantification of hydrolysable urinary metabolites and plasma protein adducts of 2,4- and 2,6-toluene diisocyanate, 1,5-naphthalene diisocyanate and 4,4'-methylenediphenyl diisocyanate. *Biomarkers* 8(3-4):204-217.
- Sennbro CJ, Lindh CH, Tinnerberg H, et al. 2004. Biological monitoring of exposure to toluene diisocyanate. *Scand J Work Environ Health* 30(5):371-378.
- Sennbro CJ, Littorin M, Tinnerberg H, et al. 2005. Upper reference limits for biomarkers of exposure to aromatic diisocyanates. *Int Arch Occup Environ Health* 78(7):541-546.
- Sepai O, Henschler D, Sabbioni G. 1995. Albumin adducts, hemoglobin adducts and urinary metabolites in workers exposed to 4,4'-methylenediphenyl diisocyanate. *Carcinogenesis* 16(10):2583-2587.
- Shaddock JG, Robinson BY, Casciano DA. 1990. Effect of pretreatment with hepatic mixed-function oxidase inducers on the genotoxicity of four rat carcinogens in the hepatocyte/DNA repair assay. *Mutagenesis* 5(4):387-391.
- Shadnia S, Ahmadimanesh M, Ghazi-Khansari M, et al. 2013. Intestinal obstruction in acute inhalational toluene 2,4-diisocyanate gas toxicity. *Int J Occup Environ Med* 4(3):164-166.
- Sharifi L, Karimi A, Shokouhi Shoormasti R, et al. 2013. Asthma symptoms and specific IgE levels among toluene diisocyanate (TDI) exposed workers in Tehran, Iran. *Iran J Public Health* 42(4):397-401.
- Shimizu H, Suzuki Y, Takemura N, et al. 1985. The results of microbial mutation test for forty-three industrial chemicals. *Jpn J Ind Health* 27(6):400-419.
- Sielken RL, Jr., Bretzlaff RS, Valdez-Flores C, et al. 2012. Statistical comparison of carcinogenic effects and dose-response relationships in rats and mice for 2,4-toluene diamine to those ascribed to toluene diisocyanate. *Hum Ecol Risk Assess* 18(6):1315-1337. 10.1080/10807039.2012.722853.
- Singer R, Scott NE. 1987. Progression of neuropsychological deficits following toluene diisocyanate exposure. *Arch Clin Neuropsychol* 2(2):135-144.
- Skarping G, Brorson T, Sango C. 1991. Biological monitoring of isocyanates and related amines. III. Test chamber exposure of humans to toluene diisocyanate. *Int Arch Occup Environ Health* 63(2):83-88.
- Skarping G, Dalene M, Lind P. 1994. Determination of toluenediamine isomers by capillary gas chromatography and chemical ionization mass spectrometry with special reference to the biological monitoring of 2,4- and 2,6-toluene diisocyanate. *J Chromatogr A* 663(2):199-210.
- Sorahan T, Nichols L. 2002. Mortality and cancer morbidity of production workers in the UK flexible polyurethane foam industry: Updated findings, 1958-98. *Occup Environ Med* 59(11):751-758.
- Sorahan T, Pope D. 1993. Mortality and cancer morbidity of production workers in the United Kingdom flexible polyurethane foam industry. *Br J Ind Med* 50(6):528-536.
- Stingeni L, Bellini V, Lisi P. 2008. Occupational airborne contact urticaria and asthma: Simultaneous immediate and delayed allergy to diphenylmethane-4,4'-diisocyanate. *Contact Dermatitis* 58(2):112-113.

9. REFERENCES

- Sulotto F, Romano C, Piolatto G, et al. 1990. Short-term respiratory changes in polyurethane foam workers exposed to low MDI concentration. *Int Arch Occup Environ Health* 62(7):521-524.
- Suojalehto H, Linstrom I, Henriks-Eckerman ML, et al. 2011. Occupational asthma related to low levels of airborne methylene diphenyl diisocyanate (MDI) in orthopedic casting work. *Am J Ind Med* 54(12):906-910.
- Swierczynska-Machura D, Brzezniński S, Nowakowska-Swirta E, et al. 2015. Occupational exposure to diisocyanates in polyurethane foam factory workers. *Int J Occup Med Environ Health* 28(6):985-998. 10.13075/ijomeh.1896.00284.
- Swierczynska-Machura D, Nowakowska-Swirta E, Walusiak-Skorupa J, et al. 2014. Effect of inhaled toluene diisocyanate on local immune response based on murine model for occupational asthma. *J Immunotoxicol* 11(2):166-171. 10.3109/1547691x.2013.818745.
- Tarlo SM, Liss GM, Dias C, et al. 1997. Assessment of the relationship between isocyanate exposure levels and occupational asthma. *Am J Ind Med* 32(5):517-521.
- Timchalk C, Smith FA, Bartels MJ. 1994. Route-dependent comparative metabolism of [¹⁴C]toluene 2,4-diisocyanate and [¹⁴C]toluene 2,4-diamine in Fischer 344 rats. *Toxicol Appl Pharmacol* 124(2):181-190.
- Tinnerberg H, Broberg K, Lindh CH, et al. 2014. Biomarkers of exposure in Monday morning urine samples as a long-term measure of exposure to aromatic diisocyanates. *Int Arch Occup Environ Health* 87(4):365-372. 10.1007/s00420-013-0872-y.
- Tinnerberg H, Spanne M, Dalene M, et al. 1997. Determination of complex mixtures of airborne isocyanates and amines. Part 3. Methylene-diphenyl diisocyanate, methylene-diphenyl-amino isocyanate and methylene-diphenyl-diamine. *Analyst* 122(3):275-278.
- Tossin L, Chiesura-Corona P, Fabbri LM, et al. 1989. Ketotifen does not inhibit asthmatic reactions induced by toluene di-isocyanate in sensitized subjects. *Clin Exp Allergy* 19(2):177-182.
- TRI16. 2017. TRI explorer: Providing access to EPA's toxics release inventory data. Washington, DC: Office of Information Analysis and Access. Office of Environmental Information. U.S. Environmental Protection Agency. Toxics Release Inventory. <http://www.epa.gov/triexplorer/>. August 2, 2017.
- Tury B, Pemberton D, Bailey RE. 2003. Fate and potential environmental effects of methylenediphenyl diisocyanate and toluene diisocyanate released into the atmosphere. *J Air Waste Manag Assoc* 53(1):61-66.
- Tse KS, Johnson A, Chan H, et al. 1985. A study of serum antibody activity in workers with occupational exposure to diphenylmethane diisocyanate. *Allergy (Copenh)* 40(5):314-320.
- Tyl RW, Fisher LC, Dodd DE, et al. 1999a. Developmental toxicity evaluation of inhaled toluene diisocyanate vapor in CD rats. *Toxicol Sci* 52(2):248-257.
- Tyl RW, Neepers-Bradley TL, Fisher LC, et al. 1999b. Two-generation reproductive toxicity study of inhaled toluene diisocyanate vapor in CD rats. *Toxicol Sci* 52(2):258-268.

9. REFERENCES

- Vandenplas O, Cartier A, Lesage J, et al. 1992. Occupational asthma caused by a prepolymer but not the monomer of toluene diisocyanate (TDI). *J Allergy Clin Immunol* 89(6):1183-1188.
- Vandenplas O, Delwiche JP, Staquet P, et al. 1999. Pulmonary effects of short-term exposure to low levels of toluene diisocyanate in asymptomatic subjects. *Eur Respir J* 13(5):1144-1150.
- Vandenplas O, Suojalehto H, Aasen TB, et al. 2014. Specific inhalation challenge in the diagnosis of occupational asthma: Consensus statement. *Eur Respir J* 43(6):1573-1587.
- Vena J, McKay C. 2007. Isocyanates and related compounds. In: Haddad and Winchester's clinical management of poisoning and drug overdose. 4th ed. Philadelphia, PA: Saunders Elsevier, 1317-1322.
- Vieira I, Sonnier M, Cresteil T. 1996. Developmental expression of CYP2E1 in the human liver: Hypermethylation control of gene expression during the neonatal period. *Eur J Biochem* 238(2):476-483.
- Vock EH, Lutz WK. 1997. Distribution and DNA adduct formation of radiolabeled methylenediphenyl-4,4'-diisocyanate (MDI) in the rat after topical treatment. *Toxicol Lett* 92(2):93-100.
- Vock EH, Cantoreggi S, Gupta RC, et al. 1995. ³²P-postlabeling analysis of DNA adducts formed *in vitro* and in rat skin by methylenediphenyl-4,4'-diisocyanate (MDI). *Toxicol Lett* 76(1):17-26.
- Vock EH, Vamvakas S, Gahlmann R, et al. 1998. Investigation of the induction of DNA double-strand breaks by methylenediphenyl-4,4'-diisocyanate in cultured human lung epithelial cells. *Toxicol Sci* 46(1):83-89.
- Wang ML, Petsonk EL. 2004. Symptom onset in the first 2 years of employment at a wood products plant using diisocyanates: Some observations relevant to occupational medical screening. *Am J Ind Med* 46(3):226-233.
- Wegman DH, Main DM, Musk AW. 1981. Chronic pulmonary function loss over 4 years in polyurethane workers exposed to toluene diisocyanate. *Am Rev Respir Dis* 123(4 Part 2):145.
- Wegman DH, Musk AW, Main DM, et al. 1982. Accelerated loss of FEV-1 in polyurethane production workers: A four-year prospective study. *Am J Ind Med* 3(2):209-215.
- Wegman DH, Peters JM, Pagnotto L, et al. 1977. Chronic pulmonary function loss from exposure to toluene diisocyanate. *Br J Ind Med* 34(3):196-200.
- West JR, Smith HW, Chasis H. 1948. Glomerular filtration rate, effective renal blood flow, and maximal tubular excretory capacity in infancy. *J Pediatr* 32:10-18.
- Weyel DA, Schaffer RB. 1985. Pulmonary and sensory irritation of diphenylmethane-4,4'- and dicyclohexylmethane-4,4'-diisocyanate. *Toxicol Appl Pharmacol* 77(3):427-433.
- White WG, Morris MJ, Sugden E, et al. 1980. Isocyanate-induced asthma in a car factory. *Lancet* 1(8171):756-760.
- WHO. 2000. Diphenylmethane diisocyanate (MDI). Concise International Chemical Assessment document 27. Geneva, Switzerland: World Health Organization.

9. REFERENCES

- WHO. 2010. Guidelines for indoor air quality: Selected pollutants. Geneva, Switzerland: World Health Organization. http://www.euro.who.int/__data/assets/pdf_file/0009/128169/e94535.pdf. April 25, 2012.
- WHO. 2017. Guidelines for drinking-water quality. Fourth edition incorporating the first addendum. Geneva, Switzerland: World Health Organization. <http://apps.who.int/iris/bitstream/10665/254637/1/9789241549950-eng.pdf?ua=1>. February 28, 2017.
- Widdowson EM, Dickerson JWT. 1964. Chemical composition of the body. In: Comar CL, Bronner F, eds. Mineral metabolism: An advance treatise. Volume II: The elements Part A. New York, NY: Academic Press, 1-247.
- Wilder LC, Langley RL, Middleton DC, et al. 2011. Communities near toluene diisocyanate sources: An investigation of exposure and health. *J Expo Sci Environ Epidemiol* 21(6):587-594.
- Wisnewski AV. 2007. Developments in laboratory diagnostics for isocyanate asthma. *Curr Opin Allergy Clin Immunol* 7(2):138-145.
- Wisnewski AV, Liu J, Redlich CA. 2013. Connecting glutathione with immune responses to occupational methylene diphenyl diisocyanate exposure. *Chem Biol Interact* 205(1):38-45.
- Woellner RC, Hall S, Greaves I, et al. 1997. Epidemic of asthma in a wood products plant using methylene diphenyl diisocyanate. *Am J Ind Med* 31(1):56-63.
- Wong KL, Karol MH, Alarie Y. 1985. Use of repeated CO₂ challenges to evaluate the pulmonary performance of guinea pigs exposed to toluene diisocyanate. *J Toxicol Environ Health* 15(1):137-148.
- Yakabe Y, Henderson KM, Thompson WC, et al. 1999. Fate of methylenediphenyl diisocyanate and toluene diisocyanate in the aquatic environment. *Environ Sci Technol* 33(15):2579-2583.
- Ye YM, Kang YM, Kim SH, et al. 2010. Probable role of beta 2-adrenergic receptor gene haplotype in toluene diisocyanate-induced asthma. *Allergy Asthma Immunol Res* 2(4):260-266.
- Ye YM, Kim CW, Kim HR, et al. 2006. Biophysical determinants of toluene diisocyanate antigenicity associated with exposure and asthma. *J Allergy Clin Immunol* 118(4):885-891.
- Yeh HJ, Lin WC, Shih TS, et al. 2008. Urinary excretion of toluene diisocyanates in rats following dermal exposure. *J Appl Toxicol* 28(2):189-195.
- Yoshizawa Y, Ohtsuka M, Noguchi K, et al. 1989. Hypersensitivity pneumonitis induced by toluene diisocyanate: Sequelae of continuous exposure. *Ann Intern Med* 110(1):31-34.
- Yucesoy B, Johnson VJ, Lummus ZL, et al. 2012. Genetic variants in antioxidant genes are associated with diisocyanate-induced asthma. *Toxicol Sci* 129(1):166-173.
- Yucesoy B, Kashon ML, Johnson VJ, et al. 2016. Genetic variants in TNF α , TGFB1, PTGS1 and PTGS2 genes are associated with diisocyanate-induced asthma. *J Immunotoxicol* 13(1):119-126.
- Yucesoy B, Kaufman KM, Lummus ZL, et al. 2015. Genome-wide association study identifies novel loci associated with diisocyanate-induced occupational asthma. *Toxicol Sci* 146(1):192-201.

9. REFERENCES

- Zammit-Tabona M, Sherkin M, Kijek K, et al. 1983. Asthma caused by diphenylmethane diisocyanate in foundry workers. Clinical, bronchial provocation, and immunologic studies. *Am Rev Respir Dis* 128(2):226-230.
- Zeiger E, Anderson B, Haworth S, et al. 1987. Salmonella mutagenicity tests: III. Results from the testing of 255 chemicals. *Environ Mutagen* 9(Suppl. 9):1-110.
- Zeiss CR, Kanellakes TM, Bellone JD, et al. 1980. Immunoglobulin E-mediated asthma and hypersensitivity pneumonitis with precipitating anti-hapten antibodies due to diphenylmethane diisocyanate (MDI) exposure. *J Allergy Clin Immunol* 65(5):347-352.
- Zhao H, Peng H, Cai SX, et al. 2009. Toluene diisocyanate enhances human bronchial epithelial cells' permeability partly through the vascular endothelial growth factor pathway. *Clin Exp Allergy* 39(10):1532-1539.
- Zheng KC, Ariizumi M, Todoriki H, et al. 2001a. Cytokine profiles in airways of rats exposed to toluene diisocyanate. *J Occup Health* 43:39-45.
- Zheng KC, Kouadio K, Tuekpe MK, et al. 2004. Eosinophil infiltration in airways of mice exposed to toluene diisocyanate. *J Occup Health* 46(4):299-302.
- Zheng KC, Nong DX, Morioka T, et al. 2001b. Elevated interleukin-4 and interleukin-6 in rats sensitized with toluene diisocyanate. *Ind Health* 39(4):334-339.
- Zhong BZ, Siegel PD. 2000. Induction of micronuclei following exposure to methylene di-phenyl diisocyanate: Potential genotoxic metabolites. *Toxicol Sci* 58(1):102-108.
- Ziegler EE, Edwards BB, Jensen RL, et al. 1978. Absorption and retention of lead by infants. *Pediatr Res* 12(1):29-34.
- Zissu D. 1995. Histopathological changes in the respiratory tract of mice exposed to ten families of airborne chemicals. *J Appl Toxicol* 15(3):207-213.