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Section 742.210 Incorporations by Reference

214215

216 217	a)	The Board incorporates the following material by reference:
217		Agency for Toxic Substances and Disease Registry (ATSDR) Minimal Risk
219		Levels (MRLs), U.S. Environmental Protection Agency, 1600 Clifton Road,
220		Mailstop F32, Atlanta, Georgia 30333, (770) 488-3357 (November 2007).
221		ACTIVITY (* 1 100 D. H. 1. D. W. (C. 1.1. 1. DA 1040)
222		ASTM International. 100 Barr Harbor Drive, West Conshohocken PA 19428-
223		2959, (610) 832-9585.
224		4 GTT 4 TO 20 T 4 OO G
225		ASTM D 2974-00, Standard Test Methods for Moisture, Ash and Organic
226		Matter of Peat and Other Organic Soils, approved August 10, 2000.
227		
228		ASTM D 2488-00, Standard Practice for Description and Identification of
229		Soils (Visual-Manual Procedure), approved February 10, 2000.
230		
231		ASTM D 1556-00, Standard Test Method for Density and Unit Weight of
232		Soil in Place by the Sand-Cone Method, approved March 10, 2000.
233		
234		ASTM D 2167-94, Standard Test Method for Density and Unit Weight of
235		Soil in Place by the Rubber Balloon Method, approved March 15, 1994.
236		
237		ASTM D 2922-01, Standard Test Methods for Density of Soil and Soil-
238		Aggregate in Place by Nuclear Methods (Shallow Depth), approved June
239		10, 2001.
240		
241		ASTM D 2937-00e1, Standard Test Method for Density of Soil in Place
242		by the Drive-Cylinder Method, approved June 10, 2000.
243		
244		ASTM D 854-02, Standard Test Methods for Specific Gravity of Soil
245		Solids by Water Pycnometer, approved July 10, 2002.
246		
247		ASTM D 2216-98, Standard Test Method for Laboratory Determination of
248		Water (Moisture) Content of Soil and Rock by Mass, approved February
249		10, 1998.
250		
251		ASTM D 4959-00, Standard Test Method for Determination of Water
252		(Moisture) Content of Soil by Direct Heating, approved March 10, 2000.
253		(Historian of Son of Brief Heating, approved Haren 10, 2000)
254		ASTM D 4643-00, Standard Test Method for Determination of Water
255		(Moisture) Content of Soil by the Microwave Oven Method, approved
256		February 10, 2000.
257		1 columy 10, 2000.
258		ASTM D 5084-03. Standard Test Methods for Measurement of Hydraulic

259	Conductivity of Saturated Porous Materials Using a Flexible Wall
260	Permeameter, approved November 1, 2003.
261	
262	ASTM D 422-63 (2002), Standard Test Method for Particle-Size Analysis
263	of Soils, approved November 10, 2002.
264	
265	ASTM D 1140-00, Standard Test Methods for Amount of Material in
266	Soils Finer than the No. 200 (75 μm) Sieve, approved June 10, 2000.
267	
268	ASTM D 3017-01, Standard Test Method for Water Content of Soil and
269	Rock in Place by Nuclear Methods (Shallow Depth), approved June 10,
270	2001.
271	
272	ASTM D 4525-90 (2001), Standard Test Method for Permeability of
273	Rocks by Flowing Air, approved May 25, 1990.
274	
275	ASTM D 2487-00, Standard Classification of Soils for Engineering
276	Purposes (Unified Soil Classification System), approved March 10, 2000.
277	
278	ASTM D 1945-03, Standard Test Method for Analysis of Natural Gas by
279	Gas Chromatography, approved May 10, 2003.
280	
281	ASTM D 1946-90, Standard Practice for Analysis of Reformed Gas by
282	Gas Chromatography, approved June 1, 2006.
283	2.00 2.00 2.00 2.00 2.00 2.00 2.00 2.00
284	ASTM E 1527-00, Standard Practice for Environmental Site Assessments:
285	Phase I Environmental Site Assessment Process, approved May 10, 2000.
286	Vol. 11.04.
287	
288	ASTM E 1739-95 (2002), Standard Guide for Risk-Based Corrective
289	Action Applied at Petroleum Release Sites, approved September 10, 1995.
290	rector rippined at 1 etroleum recease sites, approved september 10, 1993.
291	ASTM E 2121-09, Standard Practice for Installing Radon Mitigation
292	Systems in Existing Low-Rise Residential Buildings, approved November
293	1, 2009.
294	1, 2007.
295	ASTM E 2600-10, Standard Practice for Assessment for Vapor Intrusion
296	into Structures on Property Involved in Real Estate Transactions, approved
297	June 2010.
298	June 2010.
299	API. American Petroleum Institute, 1220 L Street, NW, Washington DC 20005-
300	4070 (202) 682-8000.
301	7070 (202) 002-0000.
201	

302	BIOVAPOR-A 1-D Vapor Intrusion Model with Oxygen-Limited Aerobic
303	Biodegradation, Version 2.0 (January 2010).
304	
305	Barnes, Donald G. and Dourson, Michael. (1988). Reference Dose (RfD):
306	Description and Use in Health Risk Assessments. Regulatory Toxicology and
307	Pharmacology. 8, 471-486.
308	
309	EPRI. Electric Power Research Institute. 3420 Hillview Avenue, Palo Alto,
310	California 94304. (650) 855-2121.
311	
312	Polycyclic Aromatic Hydrocarbons (PAHs) in Surface Soil in Illinois:
313	Background PAHs, EPRI, Palo Alto CA, We Energies, Milwaukee WI and
314	IEPA, Springfield IL: 2004. 1011376.
315	
316	Reference Handbook for Site-Specific Assessment of Subsurface Vapor
317	Intrusion to Indoor Air, Electric Power Research Institute (EPRI), Inc.,
318	Program No. 1008492 (March 2005).
319	
320	GPO. Superintendent of Documents, U.S. Government Printing Office,
321	Washington, DC 20401, (202) 783-3238.
322	
323	USEPA Guidelines for Carcinogenic Risk Assessment, 51 Fed. Reg.
324	33992-34003 (September 24, 1986).
325	
326	"Test Methods for Evaluating Solid Waste, Physical/Chemical Methods",
327	USEPA Publication number SW-846 (Third Edition, Final Update IIIA,
328	April 1998), as amended by Updates I, IIA, III, and IIIA (Document No.
329	955-001-00000-1).
330	,
331	"Methods for the Determination of Organic Compounds in Drinking
332	Water", EPA Publication No. EPA/600/4-88/039 (December 1988)
333	(Revised July 1991)).
334	(
335	"Methods for the Determination of Organic Compounds in Drinking
336	Water, Supplement I", EPA Publication No. EPA/600/4-90/020 (July
337	1990).
338	1,5,0).
339	"Methods for the Determination of Organic Compounds in Drinking
340	Water, Supplement II", EPA Publication No. EPA/600/R-92/129 (August
341	1992).
342	1772).
343	"Methods for the Determination of Organic Compounds in Drinking
344	Water, Supplement III", EPA Publication No. EPA/600/R-95/131 (August
J TT	water, Supplement in, Et A I doneadon No. Et A/000/K-33/131 (August

345	1995).
346	
347	"Guidance for Data Quality Assessment, Practical Methods for Data
348	Analysis, EPA QA/G-9, QAOO Update," EPA/600/R-96/084 (July 2000).
349	Available at www.epa.gov/quality/qs-docs/g9-final.pdf.
350	
351	"Assessment of Vapor Intrusion in Homes Near the Raymark Superfund
352	Site Using Basement and Sub-Slab Air Samples", EPA Publication No.
353	EPA/600/R-05/147 (March 2006).
354	
355	"Model Standards and Techniques for Control of Radon in New
356	Residential Buildings" EPA Publication No. EPA/402/R-94/009 (March
357	1994).
358	
359	"Radon Reduction Techniques for Existing Detached Houses: Technical
360	Guidance (Third Edition) for Active Soil Depressurization Systems", EPA
361	Publication No. EPA/625/R-93/011 (October 1993).
362	
363	Illinois Environmental Protection Agency, at the address of the Illinois EPA's
364	headquarters as designated on the Illinois EPA's website 1021 N. Grand Ave East,
365	Springfield IL 62701, (217) 785-0830.
366	
367	"A Summary of Selected Background Conditions for Inorganics in Soil",
368	Publication No. IEPA/ENV/94-161 (August 1994).
369	
370	IRIS. Integrated Risk Information System, National Center for Environmental
371	Assessment, U.S. Environmental Protection Agency, 26 West Martin Luther King
372	Drive, MS-190, Cincinnati, OH 45268, (513) 569-7254.
373	
374	"Reference Dose (RfD): Description and Use in Health Risk
375	Assessments", Background Document 1A (March 15, 1993).
376	(
377	"EPA Approach for Assessing the Risks Associated with Chronic
378	Exposures to Carcinogens", Background Document 2 (January 17, 1992).
379	
380	Johnson, Paul C. (2005). Identification of Application Specific Critical Inputs for
381	the 1991 Johnson and Ettinger Vapor Intrusion Algorithm. Ground Water
382	Monitoring and Remediation. 25(1), 63-78.
383	
384	Murray, Donald M. and Burmaster, David E. (1995). Residential Air Exchange
385	Rates in the United States: Empirical and Estimated Parametric Distributions by
386	Season and Climatic Region. Risk Analysis. 15(4), 459-465.
387	2

388	Nelson, D.W., and L.E. Sommers (1982). Total carbon, organic carbon, and
389	organic matter. In: A.L. Page (ed.), Methods of Soil Analysis. Part 2. Chemical
390	and Microbiological Properties. 2 nd Edition, pp. 539-579, American Society of
391	Agronomy. Madison, WI.
392	
393	NTIS. National Technical Information Service, 5285 Port Royal Road,
394	Springfield, VA 22161, (703) 487-4600.
395	
396	"Calculating Upper Confidence Limits for Exposure Point Concentrations
397	at Hazardous Waste Sites," USEPA Office of Emergency and Remedial
398	Response, OSWER 9285.6-10 (December 2002), PB 2003-104982.
399	
400	"Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater
401	and Soils", OSWER Draft Guidance. EPA Publication No. EPA/530D-
402	02/004 (November 2002).
403	
404	"Exposures Factors Handbook, Vol. I: General Factors", EPA Publication
405	No. EPA/600/P-95/002Fa (August 1997).
406	
407	"Exposures Factors Handbook, Vol. II: Food Ingestion Factors", EPA
408	Publication No. EPA/600/P-95/002Fb (August 1997).
409	
410	"Exposures Factors Handbook, Vol. III: Activity Factors", EPA
411	Publication No. EPA/600/P-95/002Fc (August 1997).
412	
413	"Risk Assessment Guidance for Superfund, Vol. I: Human Health
414	Evaluation Manual, Supplemental Guidance: Standard Default Exposure
415	Factors", OSWER Directive 9285.6-03 (March 1991).
416	
417	"Rapid Assessment of Exposure to Particulate Emissions from Surface
418	Contamination Sites", EPA Publication No. EPA/600/8-85/002 (February
419	1985), PB 85-192219.
420	
421	"Risk Assessment Guidance for Superfund, Vol. I: Human Health
422	Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk
423	Assessment) Final", EPA Publication No. EPA/540/R/99/005 (July 2004).
424	
425	"Risk Assessment Guidance for Superfund, Vol. 1: Human Health
426	Evaluation Manual (Part F, Supplemental Guidance for Inhalation Risk
427	Assessment) Final", EPA Publication No. 540-R-070-002 (January 2009).
428	
429	"Soil Screening Guidance: Technical Background Document", EPA
430	Publication No. FPA/540/R-95/128 PR 96-963502 (May 1996)

431	
432	"Soil Screening Guidance: User's Guide", EPA Publication No.
433	EPA/540/R-96/018, PB 96-963505 (April 1996).
434	
435	"Superfund Exposure Assessment Manual", EPA Publication No.
436	EPA/540/1-88/001 (April 1988).
437	
438	"Supplemental Guidance for Developing Soil Screening Levels for
439	Superfund Sites", OSWER Directive 9355.4-24 (December 2002).
440	
441	"User's Guide for Evaluating Subsurface Vapor Intrusion into Buildings",
442	EPA Publication No. EPA/68/W-02/33 (February 2004).
443	
444	Polynuclear Aromatic Hydrocarbon Background Study, City of Chicago, Illinois,
445	Tetra Tech Em Inc., 200 E. Randolph Drive, Suite 4700, Chicago IL 60601,
446	February 24, 2003.
447	
448	RCRA Facility Investigation Guidance, Interim Final, developed by USEPA (EPA
449	530/SW-89-031), 4 volumes (May 1989).
450	
451	United States Environmental Protection Agency, Office of Environmental
452	Information (2000). "Guidance for Data Quality Assessment, Practical Methods
453	for Data Analysis," EPA QA/G-9, QAOO update. EPA Publication No.
454	EPA/600/R-96-084. (Available at https://semspub.epa.gov/work/06/217322.pdf
455	www.epa.gov/oswer/riskassessment/pdf/ucl.pdf).
456	
457	United States Environmental Protection Agency, Office of Solid Waste and
458	Emergency Response (2003). "Human Health Toxicity Values in Superfund Risk
459	Assessments," OSWER Directive 9285.7-53. (Available at
460	http://www.epa.gov/oswer/riskassessment/pdf/hhmemo.pdf.)
461	
462	United States Environmental Protection Agency, Compendium of Methods for
463	Determination of Toxic Organic Compounds in Ambient Air, Second Edition,
464	EPA Publication No. EPA/625/R-96/010b, January 1999, available at
465	http://www.epa.gov/ttnamti1/files/ambient/airtox/tocomp99.pdf.
466	
467	United States Environmental Protection Agency, Test Methods for Evaluating
468	Solid Waste, Physical/Chemical Methods, SW-846 through Revision IVB
469	(February 2007), available at http://www.epa.gov/sw-846/main.htm.
470	
471	United States Environmental Protection Agency, CFR Promulgated Test Methods,
472	Methods 3C and 16, Technology Transfer Network, Emission Measurement
473	Center (2007), available at http://www.epa.gov/ttn/emc/promgate.html.

474		
475		United States Environmental Protection Agency. "Guidelines for Carcinogen Risk
476		Assessment (2005)". U.S. Environmental Protection Agency, Washington, DC,
477		EPA Publication No. EPA/630/P-03/001F, 2005. (Available at
478		http://cfpub.epa.gov/ncea/raf/recordisplay.cfm?deid=116283.)
479		
480		"Vapor Intrusion Pathway: A Practical Guide", Technical and Regulatory
481		Guidance. Interstate Technology and Regulatory Council (January 2007).
482		
483	b)	CFR (Code of Federal Regulations). Available from the Superintendent of
484		Documents, U.S. Government Printing Office, Washington, D.C. 20402 (202)
485		783-3238:
486		
487		40 CFR 761 (1998).
488		
489	c)	This Section incorporates no later editions or amendments.
490		
491	(Sou	rce: Amended at 49 Ill. Reg, effective)