Online Supplementary Material

Characterization of the selective recording of workplace exposure measurements into OSHA's IMIS databank

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Table S1: List and short description of OSH Standards codes used to create the variables associated with the violative behavior of a given establishment

std_code	Part Number	Part Title	Subpart	Subpart Title	Title
19100134	1910	OSH Standards	I	Personal Protective Equipment	Respiratory Protection.
19101000	1910	OSH Standards	Z	Toxic and Hazardous Substances	Air contaminants.
19101001	1910	OSH Standards	Z	Toxic and Hazardous Substances	Asbestos.
19101002	1910	OSH Standards	Z	Toxic and Hazardous Substances	Coal tar pitch volatiles; interpretation of term.
19101003	1910	OSH Standards	Z	Toxic and Hazardous Substances	13 Carcinogens (4-Nitrobiphenyl, etc.).
19101004	1910	OSH Standards	Z	Toxic and Hazardous Substances	alpha-Naphthylamine.
19101006	1910	OSH Standards	Z	Toxic and Hazardous Substances	Methyl chloromethyl ether.
19101007	1910	OSH Standards	Z	Toxic and Hazardous Substances	3,'-Dichlorobenzidine (and its salts).
19101008	1910	OSH Standards	Z	Toxic and Hazardous Substances	bis-Chloromethyl ether.
19101009	1910	OSH Standards	Z	Toxic and Hazardous Substances	beta-Naphthylamine.
19101010	1910	OSH Standards	Z	Toxic and Hazardous Substances	Benzidine.
19101011	1910	OSH Standards	Z	Toxic and Hazardous Substances	4-Aminodiphenyl.
19101012	1910	OSH Standards	Z	Toxic and Hazardous Substances	Ethyleneimine.
19101013	1910	OSH Standards	Z	Toxic and Hazardous Substances	beta-Propiolactone.
19101014	1910	OSH Standards	Z	Toxic and Hazardous Substances	2-Acetylaminofluorene.
19101015	1910	OSH Standards	Z	Toxic and Hazardous Substances	4-Dimethylaminoazobenzene.
19101016	1910	OSH Standards	Z	Toxic and Hazardous Substances	N-Nitrosodimethylamine.
19101017	1910	OSH Standards	Z	Toxic and Hazardous Substances	Vinyl chloride.
19101018	1910	OSH Standards	Z	Toxic and Hazardous Substances	Inorganic arsenic.
19101020	1910	OSH Standards	Z	Toxic and Hazardous Substances	Access to employee exposure and medical records.
19101025	1910	OSH Standards	Z	Toxic and Hazardous Substances	Lead.
19101027	1910	OSH Standards	Z	Toxic and Hazardous Substances	Cadmium
19101028	1910	OSH Standards	Z	Toxic and Hazardous Substances	Benzene.
19101029	1910	OSH Standards	Z	Toxic and Hazardous Substances	Coke oven emissions.
19101030	1910	OSH Standards	Z	Toxic and Hazardous Substances	Bloodborne pathogens.
19101043	1910	OSH Standards	Z	Toxic and Hazardous Substances	Cotton dust.
19101044	1910	OSH Standards	Z	Toxic and Hazardous Substances	1,2-dibromo-3-chloropropane.
19101045	1910	OSH Standards	Z	Toxic and Hazardous Substances	Acrylonitrile.
19101047	1910	OSH Standards	Z	Toxic and Hazardous Substances	Ethylene oxide.
19101048	1910	OSH Standards	Z	Toxic and Hazardous Substances	Formaldehyde.
19101050	1910	OSH Standards	Z	Toxic and Hazardous Substances	Methylenedianiline
19101052	1910	OSH Standards	Z	Toxic and Hazardous Substances	Methylene Chloride.
19101200	1910	OSH Standards	Z	Toxic and Hazardous Substances	Hazard Communication.

std_code	Part Number	Part Title	Subpart	Subpart Title	Title
19151000	1915	Occup. Safety and Health Standards for Shipyard Employment	Z	Toxic and Hazardous Substances	Air contaminants
19151001	1915	Occup. Safety and Health Standards for Shipyard Employment	Z	Toxic and Hazardous Substances	Asbestos
19151003	1915	Occup. Safety and Health Standards for Shipyard Employment	Z	Toxic and Hazardous Substances	13 Carcinogens (4-Nitrobiphenyl, etc.).
19151004	1915	Occup. Safety and Health Standards for Shipyard Employment	Z	Toxic and Hazardous Substances	alpha-Naphthylamine.
19151006	1915	Occup. Safety and Health Standards for Shipyard Employment	Z	Toxic and Hazardous Substances	Methyl chloromethyl ether.
19151007	1915	Occup. Safety and Health Standards for Shipyard Employment	Z	Toxic and Hazardous Substances	3,'-Dichlorobenzidine (and its salts).
19151008	1915	Occup. Safety and Health Standards for Shipyard Employment	Z	Toxic and Hazardous Substances	bis-Chloromethyl ether.
19151009	1915	Occup. Safety and Health Standards for Shipyard Employment	Z	Toxic and Hazardous Substances	beta-Naphthylamine.
19151010	1915	Occup. Safety and Health Standards for Shipyard Employment	Z	Toxic and Hazardous Substances	Benzidine.
19151011	1915	Occup. Safety and Health Standards for Shipyard Employment	Z	Toxic and Hazardous Substances	4-Aminodiphenyl.
19151012	1915	Occup. Safety and Health Standards for Shipyard Employment	Z	Toxic and Hazardous Substances	Ethyleneimine.
19151013	1915	Occup. Safety and Health Standards for Shipyard Employment	Z	Toxic and Hazardous Substances	beta-Propiolactone.
19151014	1915	Occup. Safety and Health Standards for Shipyard Employment	Z	Toxic and Hazardous Substances	2-Acetylaminofluorene.
19151015	1915	Occup. Safety and Health Standards for Shipyard Employment	Z	Toxic and Hazardous Substances	4-Dimethylaminoazobenzene.
19151016	1915	Occup. Safety and Health Standards for Shipyard Employment	Z	Toxic and Hazardous Substances	N-Nitrosodimethylamine.
19151017	1915	Occup. Safety and Health Standards for Shipyard Employment	Z	Toxic and Hazardous Substances	Vinyl chloride.
19151018	1915	Occup. Safety and Health Standards for Shipyard Employment	Z	Toxic and Hazardous Substances	Inorganic arsenic.
19151025	1915	Occup. Safety and Health Standards for Shipyard Employment	Z	Toxic and Hazardous Substances	Lead.
19151027	1915	Occup. Safety and Health Standards for Shipyard Employment	Z	Toxic and Hazardous Substances	Cadmium
19151028	1915	Occup. Safety and Health Standards for Shipyard Employment	Z	Toxic and Hazardous Substances	Benzene.
19151030	1915	Occup. Safety and Health Standards for Shipyard Employment	Z	Toxic and Hazardous Substances	Bloodborne pathogens.
19151044	1915	Occup. Safety and Health Standards for Shipyard Employment	Z	Toxic and Hazardous Substances	1,2-dibromo-3-chloropropane.
19151045	1915	Occup. Safety and Health Standards for Shipyard Employment	Z	Toxic and Hazardous Substances	Acrylonitrile.
19151047	1915	Occup. Safety and Health Standards for Shipyard Employment	Z	Toxic and Hazardous Substances	Ethylene oxide.
19151048	1915	Occup. Safety and Health Standards for Shipyard Employment	Z	Toxic and Hazardous Substances	Formaldehyde.
19261101	1926	Safety and Health Regulations for Construction	Z	Toxic and Hazardous Substances	Asbestos
19261103	1926	Safety and Health Regulations for Construction		Toxic and Hazardous Substances	
19261104	1926	Safety and Health Regulations for Construction		Toxic and Hazardous Substances	
19261106	1926	Safety and Health Regulations for Construction		Toxic and Hazardous Substances	
19261107	1926	Safety and Health Regulations for Construction		Toxic and Hazardous Substances	
19261108	1926	Safety and Health Regulations for Construction		Toxic and Hazardous Substances	
19261109	1926	Safety and Health Regulations for Construction		Toxic and Hazardous Substances	
19261110	1926	Safety and Health Regulations for Construction		Toxic and Hazardous Substances	
19261111	1926	Safety and Health Regulations for Construction		Toxic and Hazardous Substances	

std_code	Part Number	Part Title	Subpart	Subpart Title	Title
19261112	1926	Safety and Health Regulations for Construction		Toxic and Hazardous Substances	
19261113	1926	Safety and Health Regulations for Construction		Toxic and Hazardous Substances	
19261114	1926	Safety and Health Regulations for Construction		Toxic and Hazardous Substances	
19261115	1926	Safety and Health Regulations for Construction		Toxic and Hazardous Substances	
19261116	1926	Safety and Health Regulations for Construction		Toxic and Hazardous Substances	
19261117	1926	Safety and Health Regulations for Construction		Toxic and Hazardous Substances	
19261118	1926	Safety and Health Regulations for Construction		Toxic and Hazardous Substances	
19261127	1926	Safety and Health Regulations for Construction		Toxic and Hazardous Substances	
19261128	1926	Safety and Health Regulations for Construction		Toxic and Hazardous Substances	
19261129	1926	Safety and Health Regulations for Construction		Toxic and Hazardous Substances	
19261144	1926	Safety and Health Regulations for Construction		Toxic and Hazardous Substances	
19261145	1926	Safety and Health Regulations for Construction		Toxic and Hazardous Substances	
19261147	1926	Safety and Health Regulations for Construction		Toxic and Hazardous Substances	
19261148	1926	Safety and Health Regulations for Construction		Toxic and Hazardous Substances	

Table S2: Proportion of CEHD sampling results recorded into IMIS for all variables

Variable/ category	Proportion of sampling results recorded into IMIS (%)
(Panel) X (Exposure level)	
Panel_no : Not detected	29
Panel_no : Detected<PEL	54
Panel_no : Detected ≥PEL	64
Panel_yes : Not detected	28
Panel_yes : Detected <PEL	49
Panel_yes : Detected ≥PEL	57
Sampling time	
480 minutes vs. 30 minutes	
PEL citations in inspection	
None (0)	38
Low (1-4)	38
High (5+)	37
RespProt & HazComm citations in inspection	
None (0)	37
Low (1-3)	38
High (4+)	40
Other citations in inspection	
None (0)	36
Low (1-5)	39
High (6+)	39
Other detected levels in inspection	
None (0%)	35
Low (1-33%)	34
Med (34-66%)	40
High (67%+)	49
Establishment size	
Small (1-35)	40
Medium (36-150)	39
Large (151+)	36
Penalty	
None	37
Low	40
Medium	39
High	36
OSHA region[a]	
Boston	41
New York	28
Philadelphia	30

Atlanta	35
Chicago	39
Dallas	44
Kansas City	43
Denver	55
San Francisco	31
Seattle	48

[a]https://www.osha.gov/html/RAmap.html.

Table S3: Risk ratios (RR) for the probability of a CEHD sampling result being recorded into IMIS for the full dataset approach

Variable/ category	RR (95% CI) (full dataset)	
	1987[a]	2006
(Panel) X (Exposure level)		
Panel_no : Not detected	1.00 (reference)[b]	1.07 (1.04;1.10)
Panel_no : Detected<PEL	1.52 (1.48;1.56)[c]	2.57 (2.49;2.66)
Panel_no : Detected ≥PEL	1.38 (1.34;1.42)	1.91 (1.83;1.99)
Panel_yes : Not detected	0.96 (0.93;0.98)	0.67 (0.65;0.69)
Panel_yes : Detected <PEL	1.64 (1.60;1.69)	1.82 (1.77;1.88)
Panel_yes : Detected ≥PEL	1.64 (1.58;1.70)	1.49 (1.43;1.55)
Sampling time		
480 minutes vs. 30 minutes	1.10 (1.09;1.11)[d]	
PEL citations in inspection		
None (0)	1.00 (reference)	
Low (1-4)	0.97 (0.96;0.98)	
High (5+)	0.93 (0.92;0.94)	
RespProt & HazComm citations in inspection		
None (0)	1.00 (reference)	
Low (1-3)	1.03 (1.02;1.04)	
High (4+)	1.04 (1.03;1.05)	
Other citations in inspection		
None (0)	1.00 (reference)	
Low (1-5)	1.05 (1.04;1.06)	
High (6+)	1.02 (1.01;1.03)	
Other detected levels in inspection		
None (0%)	1.00 (reference)	
Low (1-33%)	1.00 (0.98;1.02)	
Med (34-66%)	0.99 (0.97;1.01)	
High (67%+)	1.02 (1.00;1.04)	
Establishment size		
Small (1-35)	1.00 (reference)	
Medium (36-150)	1.01 (1.00;1.02)	
Large (151+)	0.96 (0.95;0.97)	
Penalty		
None	1.00 (reference)	
Low	0.99 (0.97;1.00)	
Medium	0.97 (0.95;0.98)	
High	0.91 (0.90;0.93)	
OSHA region[e]		
Mean of OSHA regions	1.00 (reference)	
Boston	1.05 (1.04;1.06)	
New York	0.74 (0.74;0.75)	
Philadelphia	0.76 (0.75;0.77)	

Atlanta	0.92 (0.91;0.93)
Chicago	1.02 (1.01;1.03)
Dallas	1.12 (1.11;1.13)
Kansas City	1.12 (1.11;1.14)
Denver	1.40 (1.38;1.41)
San Francisco	0.84 (0.82;0.86)
Seattle	1.22 (1.18;1.26)

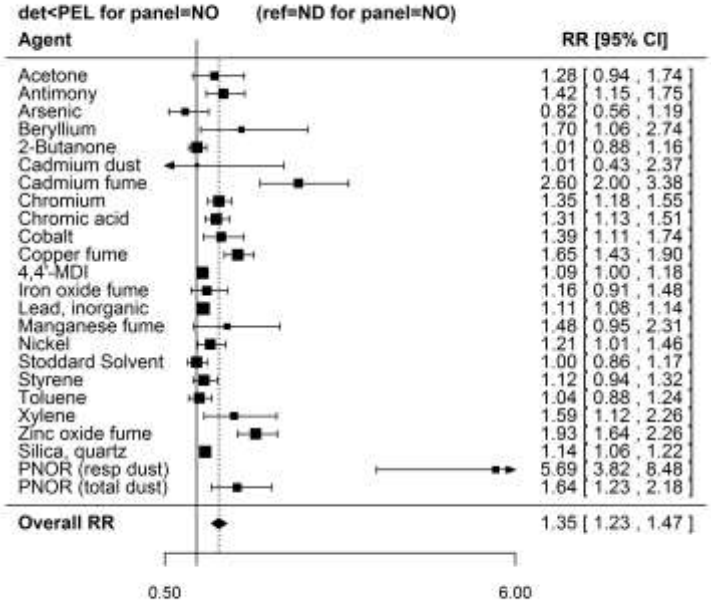
[a]To provide the results of the interaction terms involving year, we calculated predicted RRs for year 1987 (early year) and 2006 (recent year) for different combinations of the other variables.
[b]RR of the reference level taken as 1.
[c]95% confidence interval.
[d]RR for sampling time 480 min compared to 30 min.
[e]https://www.osha.gov/html/RAmap.html.

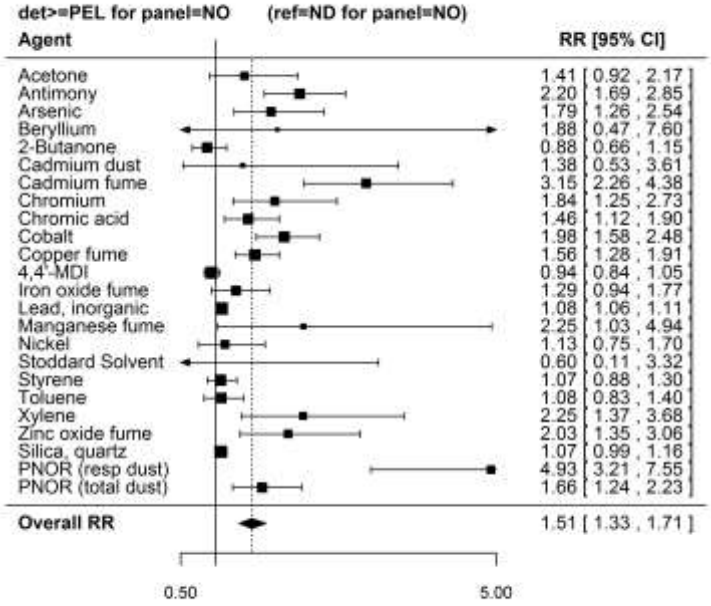
Table S4: Risk ratios (RR) for the probability of a CEHD sampling result being recorded into IMIS for all chemical agents

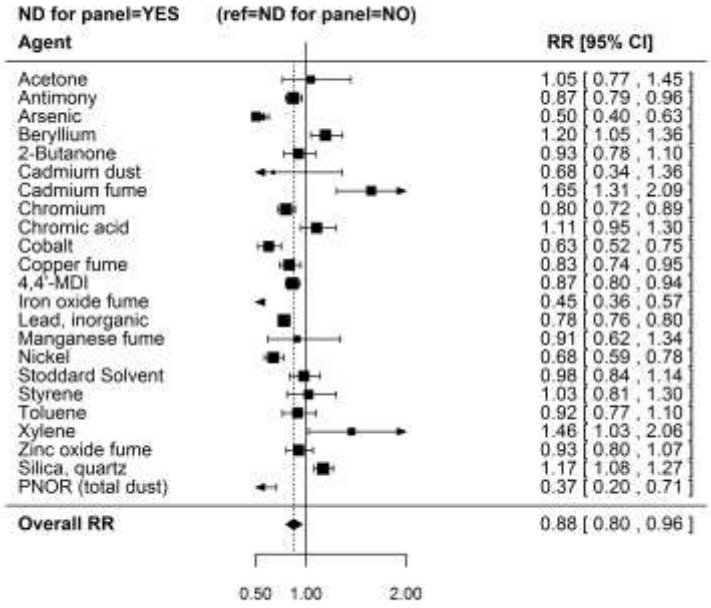
Chemical agent	RR[b] (95% CI)
Mean of chemical agents	1.00 (reference)[a]
Toluene	1.27 (1.24;1.30)
Xylene	1.28 (1.25;1.31)
2-Butanone	1.20 (1.16;1.24)
Stoddard Solvent	1.38 (1.33;1.43)
Acetone	1.26 (1.22;1.31)
Lead, inorganic	2.00 (1.98;2.02)
Copper fume	1.16 (1.14;1.17)
Zinc oxide fume	1.13 (1.11;1.14)
Antimony	1.11 (1.09;1.13)
Chromium	1.14 (1.12;1.16)
Beryllium	1.12 (1.10;1.14)
Nickel	1.15 (1.13;1.16)
Iron oxide fume	1.18 (1.17;1.20)
Cobalt	1.14 (1.12;1.16)
Manganese fume	1.11 (1.09;1.12)
Cadmium fume	1.16 (1.14;1.19)
Cadmium dust	0.19 (0.18;0.21)
Arsenic	0.81 (0.77;0.85)
Chromic acid	1.28 (1.24;1.34)
PNOR (respirable dust)	0.16 (0.15;0.17)
Silica, quartz	1.21 (1.19;1.24)
PNOR (total dust)	0.53 (0.52;0.55)
Styrene	1.17 (1.13;1.20)
4,4'-MDI	1.65 (1.60;1.71)

[a]Mean absolute probability of a CEHD sampling result being recorded into IMIS = 36%.
[b]RR adjusted for variables level of exposure, panel status, sampling duration, type of citations in inspection, other detected level in inspection, establishment size, penalty, and region.

Figure S1: Forest plots for each level of each predictor variable included in the empirical statistical models



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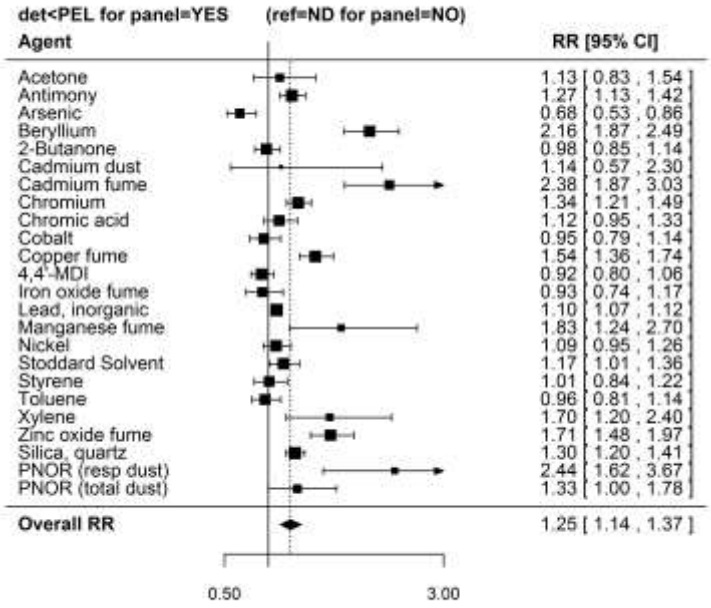
Agent
RR [95% CI]
Acetone 1.05 [0.77 , 1.45]
Antimony 0.87 [0.79 , 0.96]
Arsenic 0.50 [0.40 , 0.63]
Beryllium 1.20 [1.05 , 1.36]
2-Butanone 0.93 [0.78 , 1.10]
Cadmium dust 0.68 [0.34 , 1.36]
Cadmium fume 1.65 [1.31 , 2.09]
Chromium 0.80 [0.72 , 0.89]
Chromic acid 1.11 [0.95 , 1.30]
Cobalt 0.63 [0.52 , 0.75]
Copper fume 0.83 [0.74 , 0.95]
4,4'-MDI 0.87 [0.80 , 0.94]
Iron oxide fume 0.45 [0.36 , 0.57]
Lead, inorganic 0.78 [0.76 , 0.80]
Manganese fume 0.91 [0.62 , 1.34]
Nickel 0.68 [0.59 , 0.78]
Stoddard Solvent 0.98 [0.84 , 1.14]
Styrene 1.03 [0.81 , 1.30]
Toluene 0.92 [0.77 , 1.10]
Xylene 1.46 [1.03 , 2.06]
Zinc oxide fume 0.93 [0.80 , 1.07]
Silica, quartz 1.17 [1.08 , 1.27]
PNOR (total dust) 0.37 [0.20 , 0.71]
Overall RR 0.88 [0.80 , 0.96]
0.50
1.00
2.00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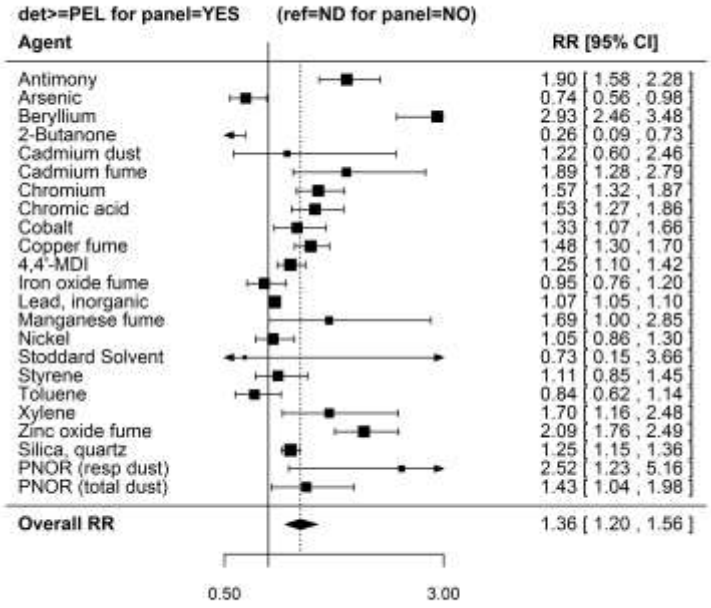
Agent
RR [95% CI]
Acetone 1.13 [0.83 , 1.54]
Antimony 1.27 [1.13 , 1.42]
Arsenic 0.68 [0.53 , 0.86]
Beryllium 2.16 [1.87 , 2.49]
2-Butanone 0.98 [0.85 , 1.14]
Cadmium dust 1.14 [0.57 , 2.30]
Cadmium fume 2.38 [1.87 , 3.03]
Chromium 1.34 [1.21 , 1.49]
Chromic acid 1.12 [0.95 , 1.33]
Cobalt 0.95 [0.79 , 1.14]
Copper fume 1.54 [1.36 , 1.74]
4,4'-MDI 0.92 [0.80 , 1.06]
Iron oxide fume 0.93 [0.74 , 1.17]
Lead, inorganic 1.10 [1.07 , 1.12]
Manganese fume 1.83 [1.24 , 2.70]
Nickel 1.09 [0.95 , 1.26]
Stoddard Solvent 1.17 [1.01 , 1.36]
Styrene 1.01 [0.84 , 1.22]
Toluene 0.96 [0.81 , 1.14]
Xylene 1.70 [1.20 , 2.40]
Zinc oxide fume 1.71 [1.48 , 1.97]
Silica, quartz 1.30 [1.20 , 1.41]
PNOR (resp dust) 2.44 [1.62 , 3.67]
PNOR (total dust) 1.33 [1.00 , 1.78]
Overall RR 1.25 [1.14 , 1.37]
0.50
3.00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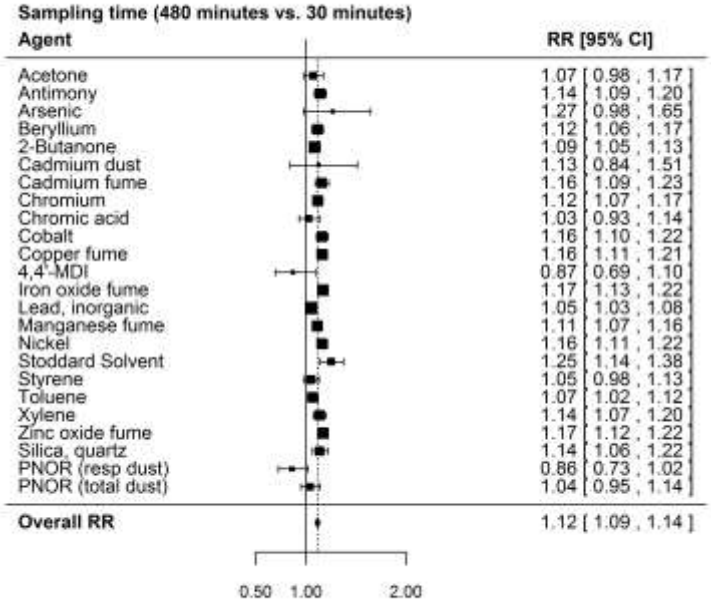
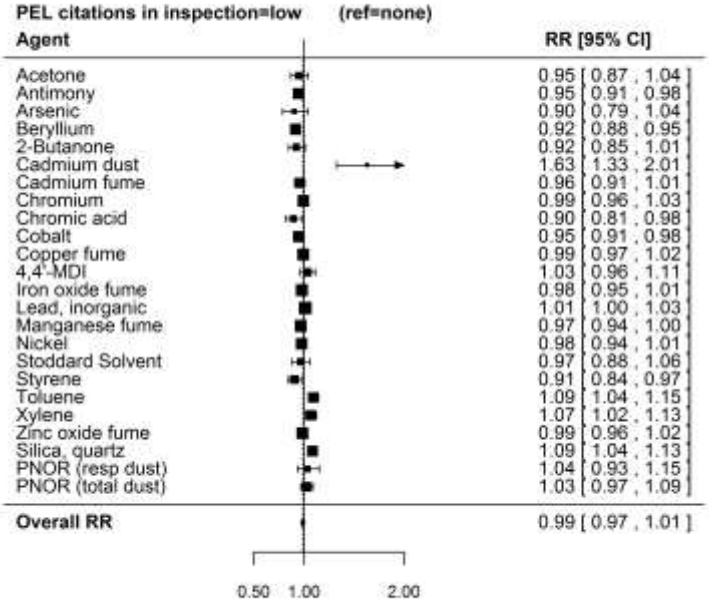
Agent
RR [95% CI]
Antimony 1.90 [1.58 , 2.28]
Arsenic 0.74 [0.56 , 0.98]
Beryllium 2.93 [2.46 , 3.48]
2-Butanone 0.26 [0.09 , 0.73]
Cadmium dust 1.22 [0.60 , 2.46]
Cadmium fume 1.89 [1.28 , 2.79]
Chromium 1.57 [1.32 , 1.87]
Chromic acid 1.53 [1.27 , 1.86]
Cobalt 1.33 [1.07 , 1.66]
Copper fume 1.48 [1.30 , 1.70]
4,4'-MDI 1.25 [1.10 , 1.42]
Iron oxide fume 0.95 [0.76 , 1.20]
Lead, inorganic 1.07 [1.05 , 1.10]
Manganese fume 1.69 [1.00 , 2.85]
Nickel 1.05 [0.86 , 1.30]
Stoddard Solvent 0.73 [0.15 , 3.66]
Styrene 1.11 [0.85 , 1.45]
Toluene 0.84 [0.62 , 1.14]
Xylene 1.70 [1.16 , 2.48]
Zinc oxide fume 2.09 [1.76 , 2.49]
Silica, quartz 1.25 [1.15 , 1.36]
PNOR (resp dust) 2.52 [1.23 , 5.16]
PNOR (total dust) 1.43 [1.04 , 1.98]
Overall RR 1.36 [1.20 , 1.56]
0.50
3.00


Sampling time (480 minutes vs. 30 minutes)
Agent
RR [95% CI]
Acetone 1.07 [0.98 , 1.17]
Antimony 1.14 [1.09 , 1.20]
Arsenic 1.27 [0.98 , 1.65]
Beryllium 1.12 [1.06 , 1.17]
2-Butanone 1.09 [1.05 , 1.13]
Cadmium dust 1.13 [0.84 , 1.51]
Cadmium fume 1.16 [1.09 , 1.23]
Chromium 1.12 [1.07 , 1.17]
Chromic acid 1.03 [0.93 , 1.14]
Cobalt 1.16 [1.10 , 1.22]
Copper fume 1.16 [1.11 , 1.21]
4,4'-MDI 0.87 [0.69 , 1.10]
Iron oxide fume 1.17 [1.13 , 1.22]
Lead, inorganic 1.05 [1.03 , 1.08]
Manganese fume 1.11 [1.07 , 1.16]
Nickel 1.16 [1.11 , 1.22]
Stoddard Solvent 1.25 [1.14 , 1.38]
Styrene 1.05 [0.98 , 1.13]
Toluene 1.07 [1.02 , 1.12]
Xylene 1.14 [1.07 , 1.20]
Zinc oxide fume 1.17 [1.12 , 1.22]
Silica, quartz 1.14 [1.06 , 1.22]
PNOR (resp dust) 0.86 [0.73 , 1.02]
PNOR (total dust) 1.04 [0.95 , 1.14]
Overall RR 1.12 [1.09 , 1.14]
0.50
1.00
2.00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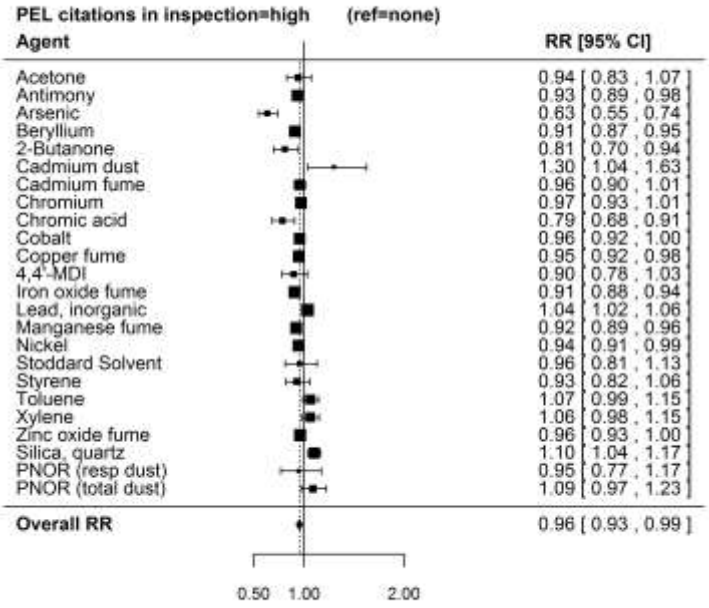
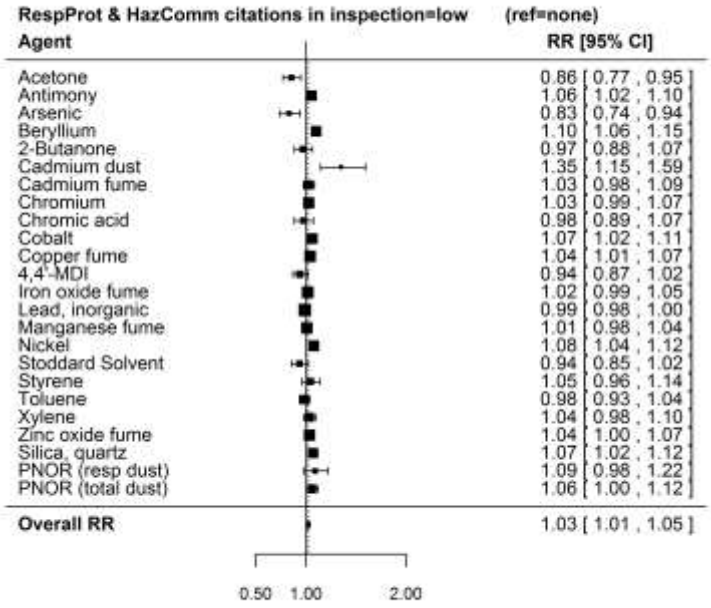
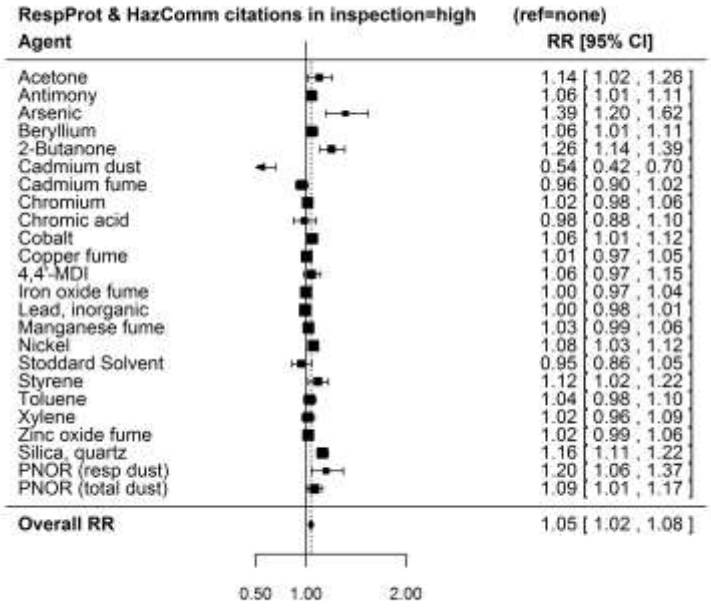
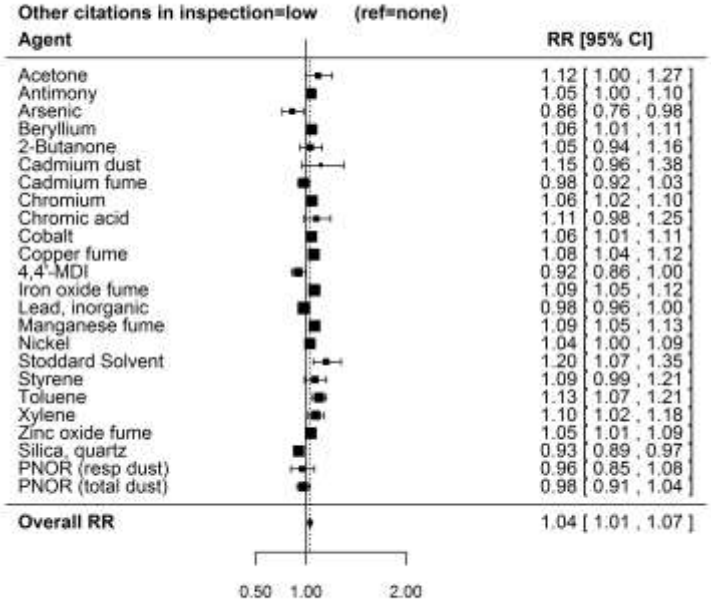
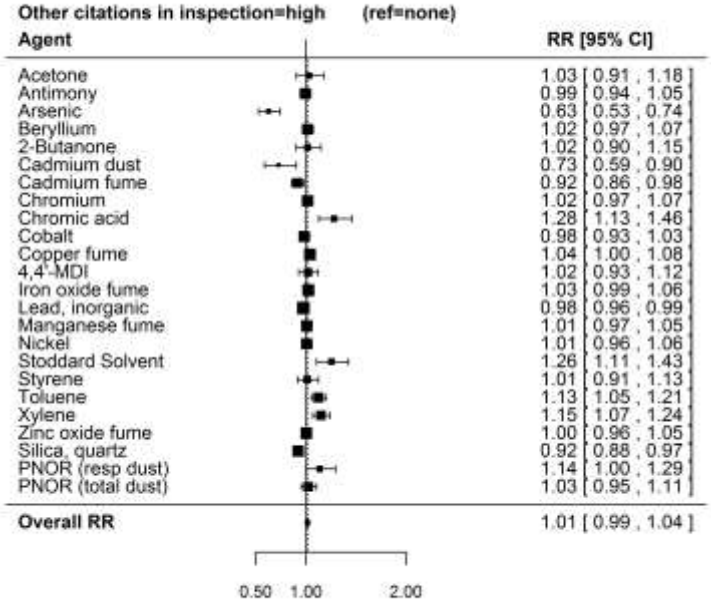
Agent
RR [95% CI]
Acetone 0.95 [0.87 , 1.04]
Antimony 0.95 [0.91 , 0.98]
Arsenic 0.90 [0.79 , 1.04]
Beryllium 0.92 [0.88 , 0.95]
2-Butanone 0.92 [0.85 , 1.01]
Cadmium dust 1.63 [1.33 , 2.01]
Cadmium fume 0.96 [0.91 , 1.01]
Chromium 0.99 [0.96 , 1.03]
Chromic acid 0.90 [0.81 , 0.98]
Cobalt 0.95 [0.91 , 0.98]
Copper fume 0.99 [0.97 , 1.02]
4,4'-MDI 1.03 [0.96 , 1.11]
Iron oxide fume 0.98 [0.95 , 1.01]
Lead, inorganic 1.01 [1.00 , 1.03]
Manganese fume 0.97 [0.94 , 1.00]
Nickel 0.98 [0.94 , 1.01]
Stoddard Solvent 0.97 [0.88 , 1.06]
Styrene 0.91 [0.84 , 0.97]
Toluene 1.09 [1.04 , 1.15]
Xylene 1.07 [1.02 , 1.13]
Zinc oxide fume 0.99 [0.96 , 1.02]
Silica, quartz 1.09 [1.04 , 1.13]
PNOR (resp dust) 1.04 [0.93 , 1.15]
PNOR (total dust) 1.03 [0.97 , 1.09]
Overall RR 0.99 [0.97 , 1.01]
0.50
1.00
2.00

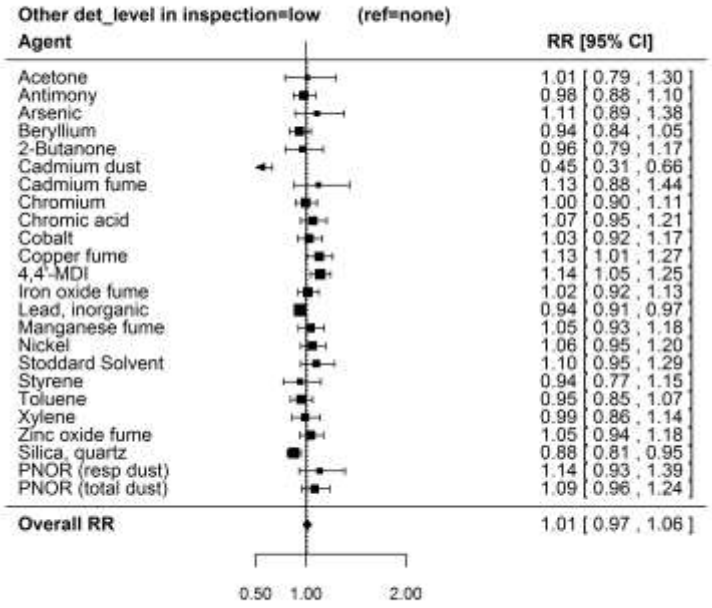

PEL citations in inspection=high (ref=none)
Agent
RR [95% CI]
Acetone 0.94 [0.83 , 1.07]
Antimony 0.93 [0.89 , 0.98]
Arsenic 0.63 [0.55 , 0.74]
Beryllium 0.91 [0.87 , 0.95]
2-Butanone 0.81 [0.70 , 0.94]
Cadmium dust 1.30 [1.04 , 1.63]
Cadmium fume 0.96 [0.90 , 1.01]
Chromium 0.97 [0.93 , 1.01]
Chromic acid 0.79 [0.68 , 0.91]
Cobalt 0.96 [0.92 , 1.00]
Copper fume 0.95 [0.92 , 0.98]
4,4'-MDI 0.90 [0.78 , 1.03]
Iron oxide fume 0.91 [0.88 , 0.94]
Lead, inorganic 1.04 [1.02 , 1.06]
Manganese fume 0.92 [0.89 , 0.96]
Nickel 0.94 [0.91 , 0.99]
Stoddard Solvent 0.96 [0.81 , 1.13]
Styrene 0.93 [0.82 , 1.06]
Toluene 1.07 [0.99 , 1.15]
Xylene 1.06 [0.98 , 1.15]
Zinc oxide fume 0.96 [0.93 , 1.00]
Silica, quartz 1.10 [1.04 , 1.17]
PNOR (resp dust) 0.95 [0.77 , 1.17]
PNOR (total dust) 1.09 [0.97 , 1.23]
Overall RR 0.96 [0.93 , 0.99]
0.50
1.00
2.00

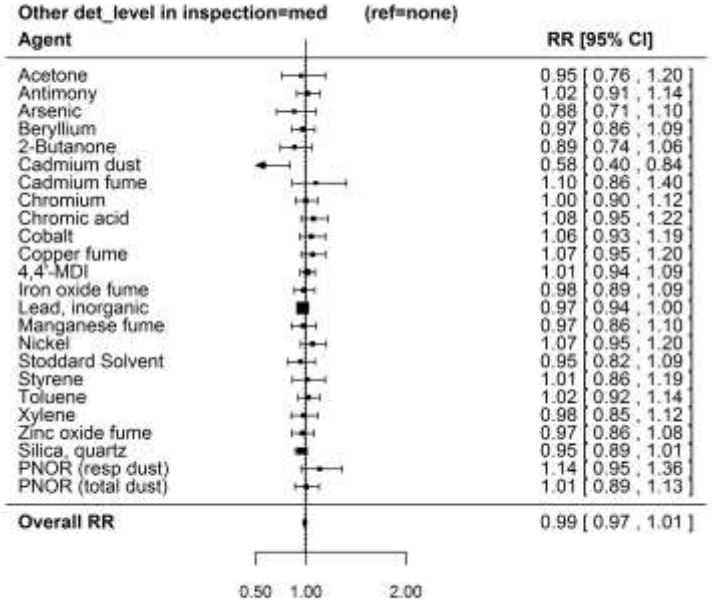

RespProt & HazComm citations in inspection=low (ref=none)
Agent
RR [95% CI]
Acetone 0.86 [0.77 , 0.95]
Antimony 1.06 [1.02 , 1.10]
Arsenic 0.83 [0.74 , 0.94]
Beryllium 1.10 [1.06 , 1.15]
2-Butanone 0.97 [0.88 , 1.07]
Cadmium dust 1.35 [1.15 , 1.59]
Cadmium fume 1.03 [0.98 , 1.09]
Chromium 1.03 [0.99 , 1.07]
Chromic acid 0.98 [0.89 , 1.07]
Cobalt 1.07 [1.02 , 1.11]
Copper fume 1.04 [1.01 , 1.07]
4,4'-MDI 0.94 [0.87 , 1.02]
Iron oxide fume 1.02 [0.99 , 1.05]
Lead, inorganic 0.99 [0.98 , 1.00]
Manganese fume 1.01 [0.98 , 1.04]
Nickel 1.08 [1.04 , 1.12]
Stoddard Solvent 0.94 [0.85 , 1.02]
Styrene 1.05 [0.96 , 1.14]
Toluene 0.98 [0.93 , 1.04]
Xylene 1.04 [0.98 , 1.10]
Zinc oxide fume 1.04 [1.00 , 1.07]
Silica, quartz 1.07 [1.02 , 1.12]
PNOR (resp dust) 1.09 [0.98 , 1.22]
PNOR (total dust) 1.06 [1.00 , 1.12]
Overall RR 1.03 [1.01 , 1.05]
0.50
1.00
2.00

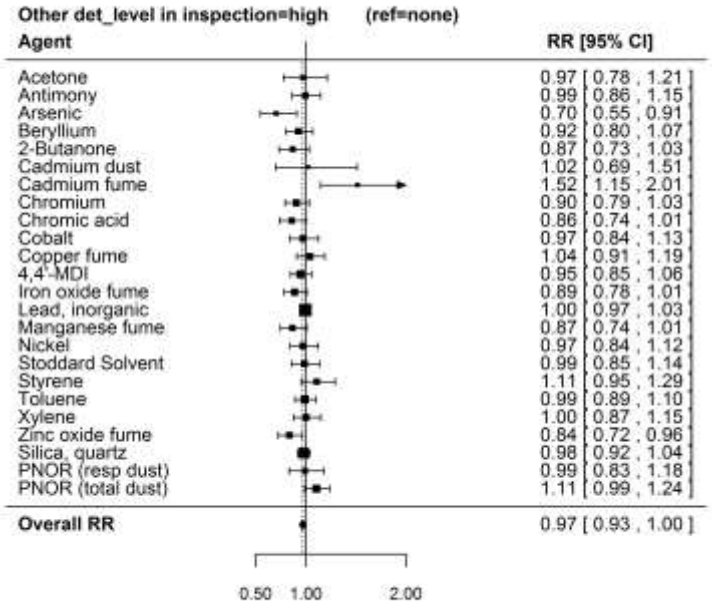

RespProt & HazComm citations in inspection=high (ref=none)
Agent
RR [95% CI]
Acetone 1.14 [1.02 , 1.26]
Antimony 1.06 [1.01 , 1.11]
Arsenic 1.39 [1.20 , 1.62]
Beryllium 1.06 [1.01 , 1.11]
2-Butanone 1.26 [1.14 , 1.39]
Cadmium dust 0.54 [0.42 , 0.70]
Cadmium fume 0.96 [0.90 , 1.02]
Chromium 1.02 [0.98 , 1.06]
Chromic acid 0.98 [0.88 , 1.10]
Cobalt 1.06 [1.01 , 1.12]
Copper fume 1.01 [0.97 , 1.05]
4,4'-MDI 1.06 [0.97 , 1.15]
Iron oxide fume 1.00 [0.97 , 1.04]
Lead, inorganic 1.00 [0.98 , 1.01]
Manganese fume 1.03 [0.99 , 1.06]
Nickel 1.08 [1.03 , 1.12]
Stoddard Solvent 0.95 [0.86 , 1.05]
Styrene 1.12 [1.02 , 1.22]
Toluene 1.04 [0.98 , 1.10]
Xylene 1.02 [0.96 , 1.09]
Zinc oxide fume 1.02 [0.99 , 1.06]
Silica, quartz 1.16 [1.11 , 1.22]
PNOR (resp dust) 1.20 [1.06 , 1.37]
PNOR (total dust) 1.09 [1.01 , 1.17]
Overall RR 1.05 [1.02 , 1.08]
0.50
1.00
2.00

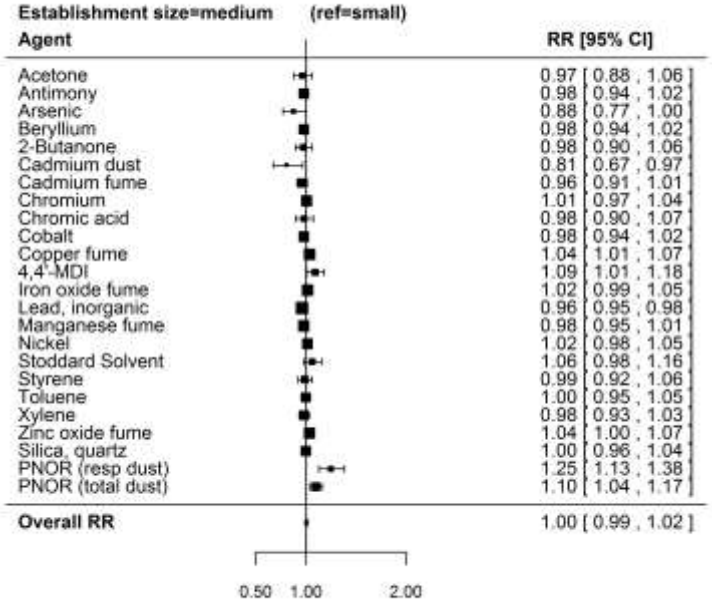

Other citations in inspection=low (ref=none)
Agent
RR [95% CI]
Acetone 1.12 [1.00 , 1.27]
Antimony 1.05 [1.00 , 1.10]
Arsenic 0.86 [0.76 , 0.98]
Beryllium 1.06 [1.01 , 1.11]
2-Butanone 1.05 [0.94 , 1.16]
Cadmium dust 1.15 [0.96 , 1.38]
Cadmium fume 0.98 [0.92 , 1.03]
Chromium 1.06 [1.02 , 1.10]
Chromic acid 1.11 [0.98 , 1.25]
Cobalt 1.06 [1.01 , 1.11]
Copper fume 1.08 [1.04 , 1.12]
4,4'-MDI 0.92 [0.86 , 1.00]
Iron oxide fume 1.09 [1.05 , 1.12]
Lead, inorganic 0.98 [0.96 , 1.00]
Manganese fume 1.09 [1.05 , 1.13]
Nickel 1.04 [1.00 , 1.09]
Stoddard Solvent 1.20 [1.07 , 1.35]
Styrene 1.09 [0.99 , 1.21]
Toluene 1.13 [1.07 , 1.21]
Xylene 1.10 [1.02 , 1.18]
Zinc oxide fume 1.05 [1.01 , 1.09]
Silica, quartz 0.93 [0.89 , 0.97]
PNOR (resp dust) 0.96 [0.85 , 1.08]
PNOR (total dust) 0.98 [0.91 , 1.04]
Overall RR 1.04 [1.01 , 1.07]
0.50
1.00
2.00

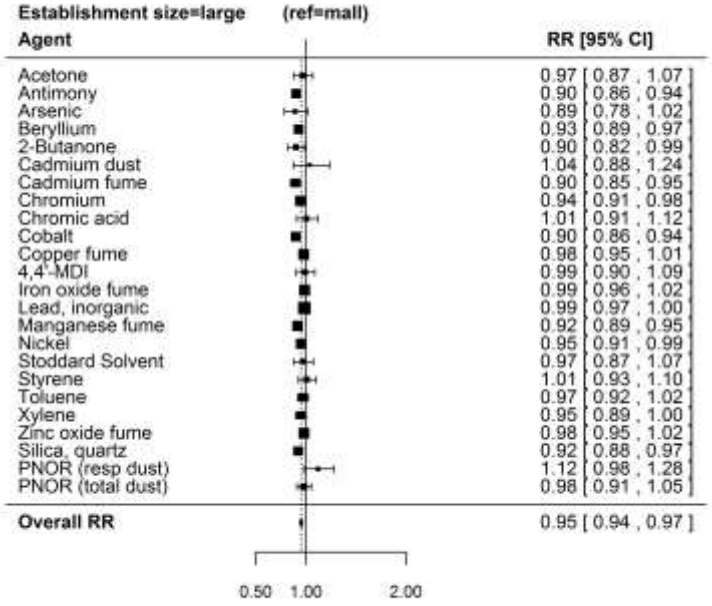

Other citations in inspection=high (ref=none)
Agent
RR [95% CI]
Acetone 1.03 [0.91 , 1.18]
Antimony 0.99 [0.94 , 1.05]
Arsenic 0.63 [0.53 , 0.74]
Beryllium 1.02 [0.97 , 1.07]
2-Butanone 1.02 [0.90 , 1.15]
Cadmium dust 0.73 [0.59 , 0.90]
Cadmium fume 0.92 [0.86 , 0.98]
Chromium 1.02 [0.97 , 1.07]
Chromic acid 1.28 [1.13 , 1.46]
Cobalt 0.98 [0.93 , 1.03]
Copper fume 1.04 [1.00 , 1.08]
4,4'-MDI 1.02 [0.93 , 1.12]
Iron oxide fume 1.03 [0.99 , 1.06]
Lead, inorganic 0.98 [0.96 , 0.99]
Manganese fume 1.01 [0.97 , 1.05]
Nickel 1.01 [0.96 , 1.06]
Stoddard Solvent 1.26 [1.11 , 1.43]
Styrene 1.01 [0.91 , 1.13]
Toluene 1.13 [1.05 , 1.21]
Xylene 1.15 [1.07 , 1.24]
Zinc oxide fume 1.00 [0.96 , 1.05]
Silica, quartz 0.92 [0.88 , 0.97]
PNOR (resp dust) 1.14 [1.00 , 1.29]
PNOR (total dust) 1.03 [0.95 , 1.11]
Overall RR 1.01 [0.99 , 1.04]
0.50
1.00
2.00

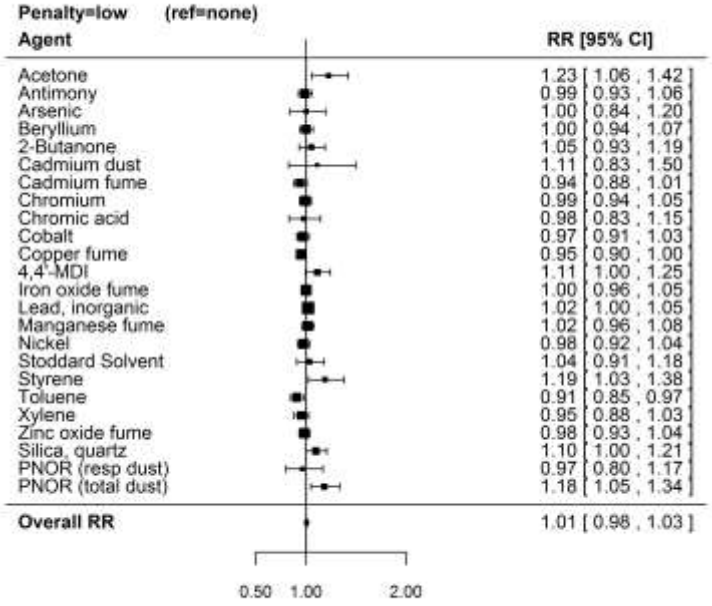

Other det_level in inspection=low (ref=none)
Agent
RR [95% CI]
Acetone 1.01 [0.79 , 1.30]
Antimony 0.98 [0.88 , 1.10]
Arsenic 1.11 [0.89 , 1.38]
Beryllium 0.94 [0.84 , 1.05]
2-Butanone 0.96 [0.79 , 1.17]
Cadmium dust 0.45 [0.31 , 0.66]
Cadmium fume 1.13 [0.88 , 1.44]
Chromium 1.00 [0.90 , 1.11]
Chromic acid 1.07 [0.95 , 1.21]
Cobalt 1.03 [0.92 , 1.17]
Copper fume 1.13 [1.01 , 1.27]
4,4'-MDI 1.14 [1.05 , 1.25]
Iron oxide fume 1.02 [0.92 , 1.13]
Lead, inorganic 0.94 [0.91 , 0.97]
Manganese fume 1.05 [0.93 , 1.18]
Nickel 1.06 [0.95 , 1.20]
Stoddard Solvent 1.10 [0.95 , 1.29]
Styrene 0.94 [0.77 , 1.15]
Toluene 0.95 [0.85 , 1.07]
Xylene 0.99 [0.86 , 1.14]
Zinc oxide fume 1.05 [0.94 , 1.18]
Silica, quartz 0.88 [0.81 , 0.95]
PNOR (resp dust) 1.14 [0.93 , 1.39]
PNOR (total dust) 1.09 [0.96 , 1.24]
Overall RR 1.01 [0.97 , 1.06]
0.50
1.00
2.00

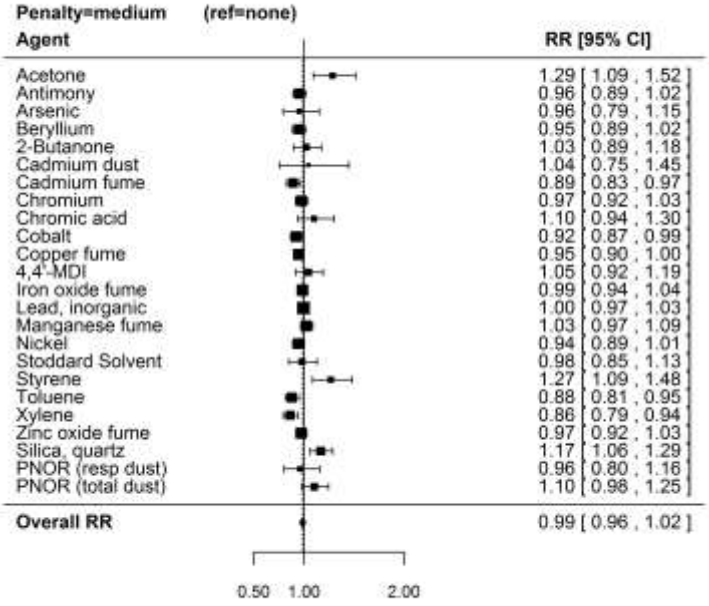

Other det_level in inspection=med (ref=none)
Agent
RR [95% CI]
Acetone 0.95 [0.76 , 1.20]
Antimony 1.02 [0.91 , 1.14]
Arsenic 0.88 [0.71 , 1.10]
Beryllium 0.97 [0.86 , 1.09]
2-Butanone 0.89 [0.74 , 1.06]
Cadmium dust 0.58 [0.40 , 0.84]
Cadmium fume 1.10 [0.86 , 1.40]
Chromium 1.00 [0.90 , 1.12]
Chromic acid 1.08 [0.95 , 1.22]
Cobalt 1.06 [0.93 , 1.19]
Copper fume 1.07 [0.95 , 1.20]
4,4'-MDI 1.01 [0.94 , 1.09]
Iron oxide fume 0.98 [0.89 , 1.09]
Lead, inorganic 0.97 [0.94 , 1.00]
Manganese fume 0.97 [0.86 , 1.10]
Nickel 1.07 [0.95 , 1.20]
Stoddard Solvent 0.95 [0.82 , 1.09]
Styrene 1.01 [0.86 , 1.19]
Toluene 1.02 [0.92 , 1.14]
Xylene 0.98 [0.85 , 1.12]
Zinc oxide fume 0.97 [0.86 , 1.08]
Silica, quartz 0.95 [0.89 , 1.01]
PNOR (resp dust) 1.14 [0.95 , 1.36]
PNOR (total dust) 1.01 [0.89 , 1.13]
Overall RR 0.99 [0.97 , 1.01]
0.50
1.00
2.00

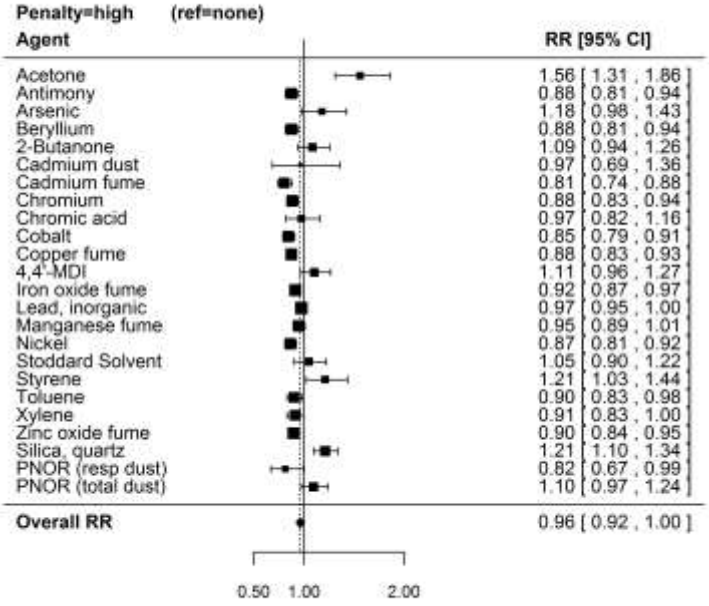

Other det_level in inspection=high (ref=none)
Agent
RR [95% CI]
Acetone 0.97 [0.78 , 1.21]
Antimony 0.99 [0.86 , 1.15]
Arsenic 0.70 [0.55 , 0.91]
Beryllium 0.92 [0.80 , 1.07]
2-Butanone 0.87 [0.73 , 1.03]
Cadmium dust 1.02 [0.69 , 1.51]
Cadmium fume 1.52 [1.15 , 2.01]
Chromium 0.90 [0.79 , 1.03]
Chromic acid 0.86 [0.74 , 1.01]
Cobalt 0.97 [0.84 , 1.13]
Copper fume 1.04 [0.91 , 1.19]
4,4'-MDI 0.95 [0.85 , 1.06]
Iron oxide fume 0.89 [0.78 , 1.01]
Lead, inorganic 1.00 [0.97 , 1.03]
Manganese fume 0.87 [0.74 , 1.01]
Nickel 0.97 [0.84 , 1.12]
Stoddard Solvent 0.99 [0.85 , 1.14]
Styrene 1.11 [0.95 , 1.29]
Toluene 0.99 [0.89 , 1.10]
Xylene 1.00 [0.87 , 1.15]
Zinc oxide fume 0.84 [0.72 , 0.96]
Silica, quartz 0.98 [0.92 , 1.04]
PNOR (resp dust) 0.99 [0.83 , 1.18]
PNOR (total dust) 1.11 [0.99 , 1.24]
Overall RR 0.97 [0.93 , 1.00]
0.50
1.00
2.00

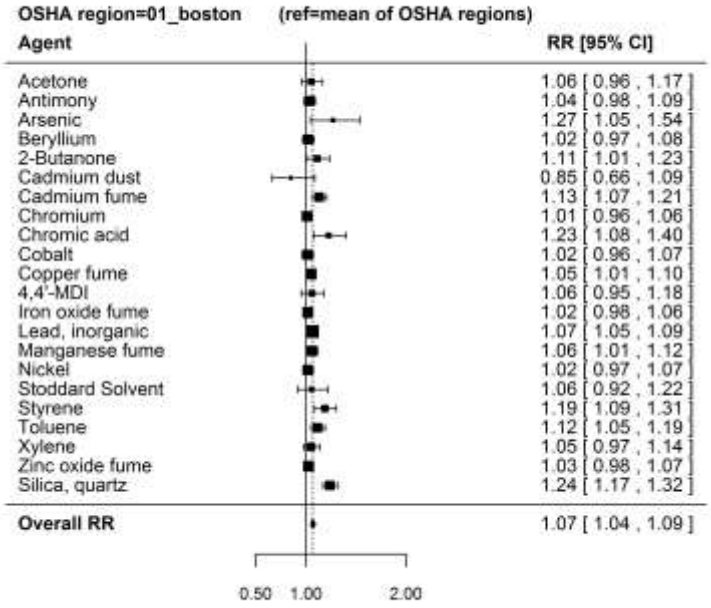

Establishment size=medium (ref=small)
Agent
RR [95% CI]
Acetone 0.97 [0.88 , 1.06]
Antimony 0.98 [0.94 , 1.02]
Arsenic 0.88 [0.77 , 1.00]
Beryllium 0.98 [0.94 , 1.02]
2-Butanone 0.98 [0.90 , 1.06]
Cadmium dust 0.81 [0.67 , 0.97]
Cadmium fume 0.96 [0.91 , 1.01]
Chromium 1.01 [0.97 , 1.04]
Chromic acid 0.98 [0.90 , 1.07]
Cobalt 0.98 [0.94 , 1.02]
Copper fume 1.04 [1.01 , 1.07]
4,4'-MDI 1.09 [1.01 , 1.18]
Iron oxide fume 1.02 [0.99 , 1.05]
Lead, inorganic 0.96 [0.95 , 0.98]
Manganese fume 0.98 [0.95 , 1.01]
Nickel 1.02 [0.98 , 1.05]
Stoddard Solvent 1.06 [0.98 , 1.16]
Styrene 0.99 [0.92 , 1.06]
Toluene 1.00 [0.95 , 1.05]
Xylene 0.98 [0.93 , 1.03]
Zinc oxide fume 1.04 [1.00 , 1.07]
Silica, quartz 1.00 [0.96 , 1.04]
PNOR (resp dust) 1.25 [1.13 , 1.38]
PNOR (total dust) 1.10 [1.04 , 1.17]
Overall RR 1.00 [0.99 , 1.02]
0.50
1.00
2.00

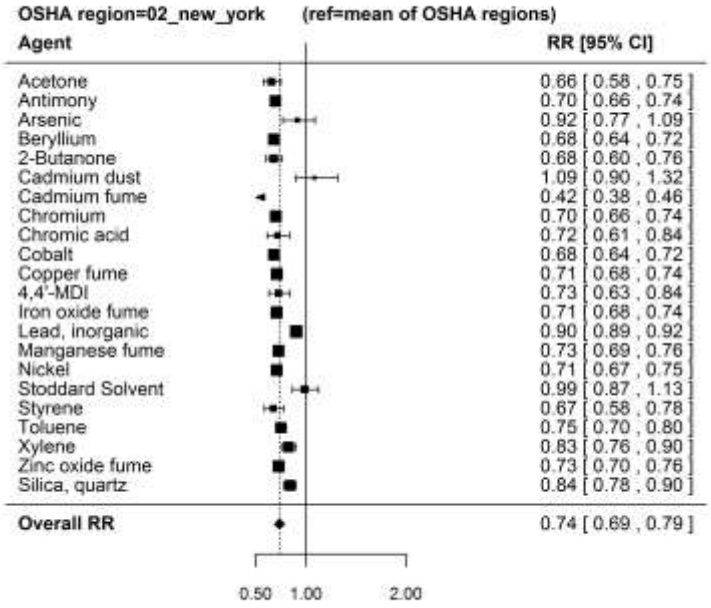

Establishment size=large (ref=mall)
Agent
RR [95% CI]
Acetone 0.97 [0.87 , 1.07]
Antimony 0.90 [0.86 , 0.94]
Arsenic 0.89 [0.78 , 1.02]
Beryllium 0.93 [0.89 , 0.97]
2-Butanone 0.90 [0.82 , 0.99]
Cadmium dust 1.04 [0.88 , 1.24]
Cadmium fume 0.90 [0.85 , 0.95]
Chromium 0.94 [0.91 , 0.98]
Chromic acid 1.01 [0.91 , 1.12]
Cobalt 0.90 [0.86 , 0.94]
Copper fume 0.98 [0.95 , 1.01]
4,4'-MDI 0.99 [0.90 , 1.09]
Iron oxide fume 0.99 [0.96 , 1.02]
Lead, inorganic 0.99 [0.97 , 1.00]
Manganese fume 0.92 [0.89 , 0.95]
Nickel 0.95 [0.91 , 0.99]
Stoddard Solvent 0.97 [0.87 , 1.07]
Styrene 1.01 [0.93 , 1.10]
Toluene 0.97 [0.92 , 1.02]
Xylene 0.95 [0.89 , 1.00]
Zinc oxide fume 0.98 [0.95 , 1.02]
Silica, quartz 0.92 [0.88 , 0.97]
PNOR (resp dust) 1.12 [0.98 , 1.28]
PNOR (total dust) 0.98 [0.91 , 1.05]
Overall RR 0.95 [0.94 , 0.97]
0.50
1.00
2.00

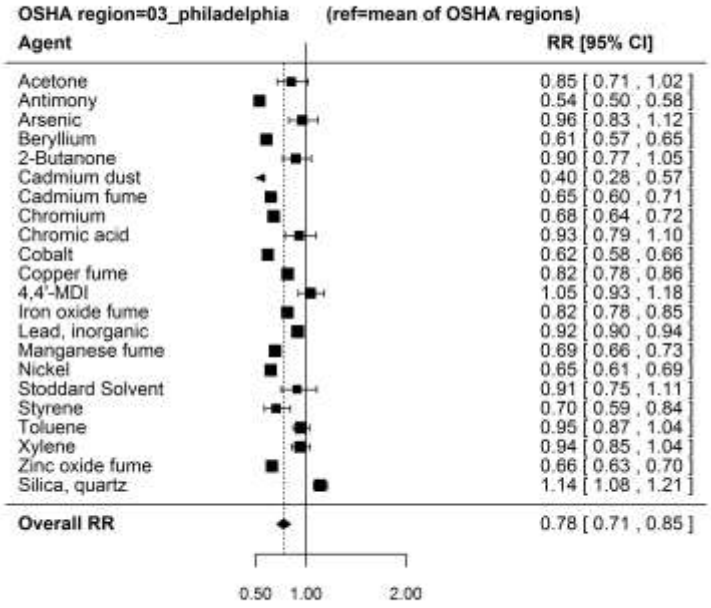

Penalty=low (ref=none)
Agent
RR [95% CI]
Acetone 1.23 [1.06 , 1.42]
Antimony 0.99 [0.93 , 1.06]
Arsenic 1.00 [0.84 , 1.20]
Beryllium 1.00 [0.94 , 1.07]
2-Butanone 1.05 [0.93 , 1.19]
Cadmium dust 1.11 [0.83 , 1.50]
Cadmium fume 0.94 [0.88 , 1.01]
Chromium 0.99 [0.94 , 1.05]
Chromic acid 0.98 [0.83 , 1.15]
Cobalt 0.97 [0.91 , 1.03]
Copper fume 0.95 [0.90 , 1.00]
4,4'-MDI 1.11 [1.00 , 1.25]
Iron oxide fume 1.00 [0.96 , 1.05]
Lead, inorganic 1.02 [1.00 , 1.05]
Manganese fume 1.02 [0.96 , 1.08]
Nickel 0.98 [0.92 , 1.04]
Stoddard Solvent 1.04 [0.91 , 1.18]
Styrene 1.19 [1.03 , 1.38]
Toluene 0.91 [0.85 , 0.97]
Xylene 0.95 [0.88 , 1.03]
Zinc oxide fume 0.98 [0.93 , 1.04]
Silica, quartz 1.10 [1.00 , 1.21]
PNOR (resp dust) 0.97 [0.80 , 1.17]
PNOR (total dust) 1.18 [1.05 , 1.34]
Overall RR 1.01 [0.98 , 1.03]
0.50
1.00
2.00

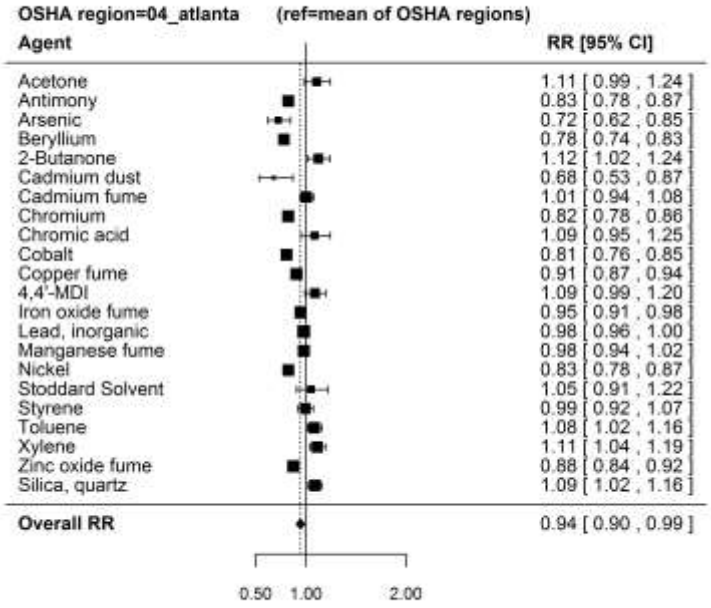

Penalty=medium (ref=none)
Agent
RR [95% CI]
Acetone 1.29 [1.09 , 1.52]
Antimony 0.96 [0.89 , 1.02]
Arsenic 0.96 [0.79 , 1.15]
Beryllium 0.95 [0.89 , 1.02]
2-Butanone 1.03 [0.89 , 1.18]
Cadmium dust 1.04 [0.75 , 1.45]
Cadmium fume 0.89 [0.83 , 0.97]
Chromium 0.97 [0.92 , 1.03]
Chromic acid 1.10 [0.94 , 1.30]
Cobalt 0.92 [0.87 , 0.99]
Copper fume 0.95 [0.90 , 1.00]
4,4'-MDI 1.05 [0.92 , 1.19]
Iron oxide fume 0.99 [0.94 , 1.04]
Lead, inorganic 1.00 [0.97 , 1.03]
Manganese fume 1.03 [0.97 , 1.09]
Nickel 0.94 [0.89 , 1.01]
Stoddard Solvent 0.98 [0.85 , 1.13]
Styrene 1.27 [1.09 , 1.48]
Toluene 0.88 [0.81 , 0.95]
Xylene 0.86 [0.79 , 0.94]
Zinc oxide fume 0.97 [0.92 , 1.03]
Silica, quartz 1.17 [1.06 , 1.29]
PNOR (resp dust) 0.96 [0.80 , 1.16]
PNOR (total dust) 1.10 [0.98 , 1.25]
Overall RR 0.99 [0.96 , 1.02]
0.50
1.00
2.00

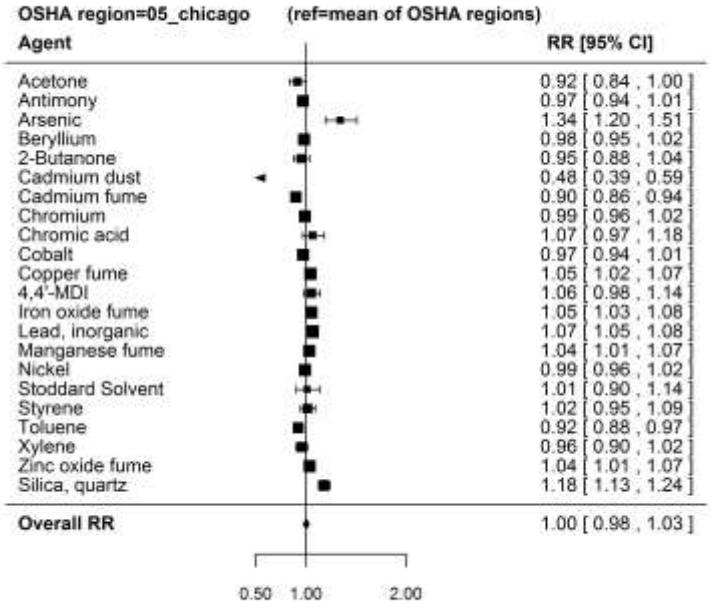

Penalty=high (ref=none)
Agent
RR [95% CI]
Acetone 1.56 [1.31 , 1.86]
Antimony 0.88 [0.81 , 0.94]
Arsenic 1.18 [0.98 , 1.43]
Beryllium 0.88 [0.81 , 0.94]
2-Butanone 1.09 [0.94 , 1.26]
Cadmium dust 0.97 [0.69 , 1.36]
Cadmium fume 0.81 [0.74 , 0.88]
Chromium 0.88 [0.83 , 0.94]
Chromic acid 0.97 [0.82 , 1.16]
Cobalt 0.85 [0.79 , 0.91]
Copper fume 0.88 [0.83 , 0.93]
4,4'-MDI 1.11 [0.96 , 1.27]
Iron oxide fume 0.92 [0.87 , 0.97]
Lead, inorganic 0.97 [0.95 , 1.00]
Manganese fume 0.95 [0.89 , 1.01]
Nickel 0.87 [0.81 , 0.92]
Stoddard Solvent 1.05 [0.90 , 1.22]
Styrene 1.21 [1.03 , 1.44]
Toluene 0.90 [0.83 , 0.98]
Xylene 0.91 [0.83 , 1.00]
Zinc oxide fume 0.90 [0.84 , 0.95]
Silica, quartz 1.21 [1.10 , 1.34]
PNOR (resp dust) 0.82 [0.67 , 0.99]
PNOR (total dust) 1.10 [0.97 , 1.24]
Overall RR 0.96 [0.92 , 1.00]
0.50
1.00
2.00

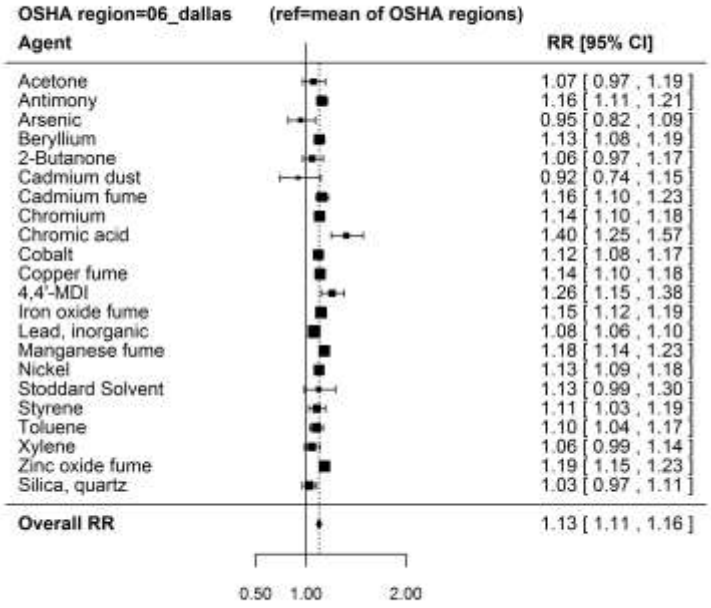

OSHA region=01_boston (ref=mean of OSHA regions)
Agent
RR [95% CI]
Acetone 1.06 [0.96 , 1.17]
Antimony 1.04 [0.98 , 1.09]
Arsenic 1.27 [1.05 , 1.54]
Beryllium 1.02 [0.97 , 1.08]
2-Butanone 1.11 [1.01 , 1.23]
Cadmium dust 0.85 [0.66 , 1.09]
Cadmium fume 1.13 [1.07 , 1.21]
Chromium 1.01 [0.96 , 1.06]
Chromic acid 1.23 [1.08 , 1.40]
Cobalt 1.02 [0.96 , 1.07]
Copper fume 1.05 [1.01 , 1.10]
4,4'-MDI 1.06 [0.95 , 1.18]
Iron oxide fume 1.02 [0.98 , 1.06]
Lead, inorganic 1.07 [1.05 , 1.09]
Manganese fume 1.06 [1.01 , 1.12]
Nickel 1.02 [0.97 , 1.07]
Stoddard Solvent 1.06 [0.92 , 1.22]
Styrene 1.19 [1.09 , 1.31]
Toluene 1.12 [1.05 , 1.19]
Xylene 1.05 [0.97 , 1.14]
Zinc oxide fume 1.03 [0.98 , 1.07]
Silica, quartz 1.24 [1.17 , 1.32]
Overall RR 1.07 [1.04 , 1.09]
0.50
1.00
2.00

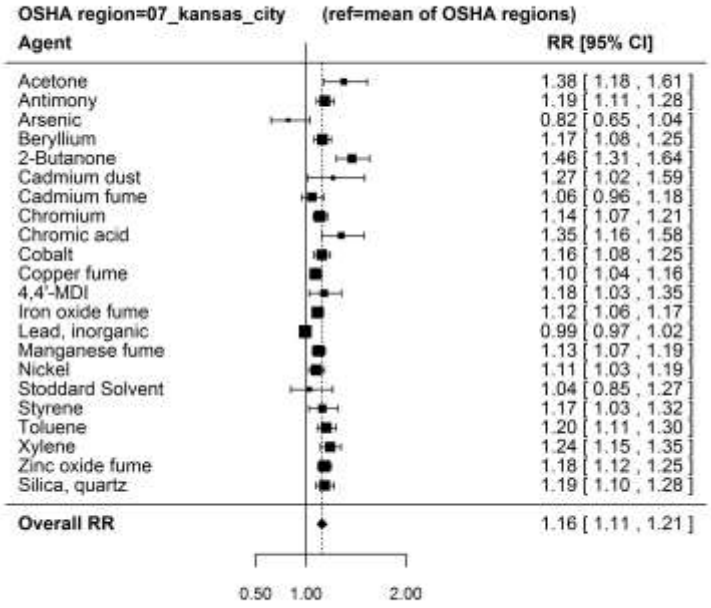

OSHA region=02_new_york (ref=mean of OSHA regions)
Agent
RR [95% CI]
Acetone 0.66 [0.58 , 0.75]
Antimony 0.70 [0.66 , 0.74]
Arsenic 0.92 [0.77 , 1.09]
Beryllium 0.68 [0.64 , 0.72]
2-Butanone 0.68 [0.60 , 0.76]
Cadmium dust 1.09 [0.90 , 1.32]
Cadmium fume 0.42 [0.38 , 0.46]
Chromium 0.70 [0.66 , 0.74]
Chromic acid 0.72 [0.61 , 0.84]
Cobalt 0.68 [0.64 , 0.72]
Copper fume 0.71 [0.68 , 0.74]
4,4'-MDI 0.73 [0.63 , 0.84]
Iron oxide fume 0.71 [0.68 , 0.74]
Lead, inorganic 0.90 [0.89 , 0.92]
Manganese fume 0.73 [0.69 , 0.76]
Nickel 0.71 [0.67 , 0.75]
Stoddard Solvent 0.99 [0.87 , 1.13]
Styrene 0.67 [0.58 , 0.78]
Toluene 0.75 [0.70 , 0.80]
Xylene 0.83 [0.76 , 0.90]
Zinc oxide fume 0.73 [0.70 , 0.76]
Silica, quartz 0.84 [0.78 , 0.90]
Overall RR 0.74 [0.69 , 0.79]
0.50
1.00
2.00

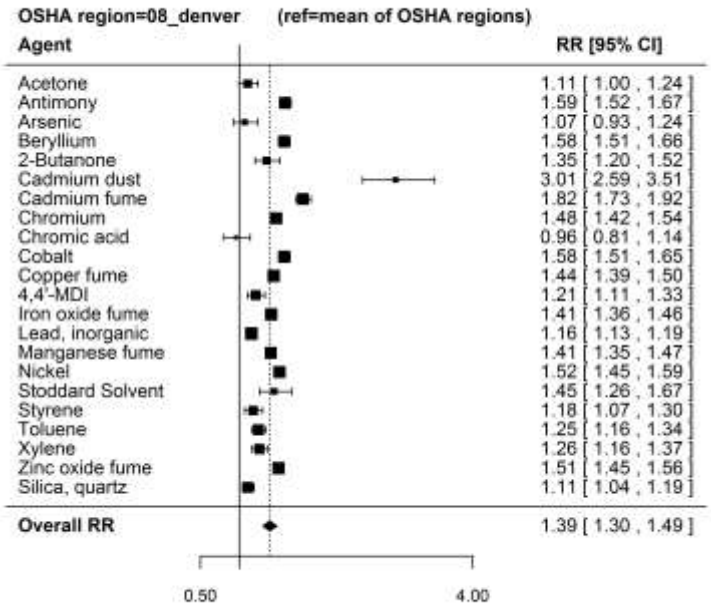

OSHA region=03_philadelphia (ref=mean of OSHA regions)
Agent
RR [95% CI]
Acetone 0.85 [0.71 , 1.02]
Antimony 0.54 [0.50 , 0.58]
Arsenic 0.96 [0.83 , 1.12]
Beryllium 0.61 [0.57 , 0.65]
2-Butanone 0.90 [0.77 , 1.05]
Cadmium dust 0.40 [0.28 , 0.57]
Cadmium fume 0.65 [0.60 , 0.71]
Chromium 0.68 [0.64 , 0.72]
Chromic acid 0.93 [0.79 , 1.10]
Cobalt 0.62 [0.58 , 0.66]
Copper fume 0.82 [0.78 , 0.86]
4,4'-MDI 1.05 [0.93 , 1.18]
Iron oxide fume 0.82 [0.78 , 0.85]
Lead, inorganic 0.92 [0.90 , 0.94]
Manganese fume 0.69 [0.66 , 0.73]
Nickel 0.65 [0.61 , 0.69]
Stoddard Solvent 0.91 [0.75 , 1.11]
Styrene 0.70 [0.59 , 0.84]
Toluene 0.95 [0.87 , 1.04]
Xylene 0.94 [0.85 , 1.04]
Zinc oxide fume 0.66 [0.63 , 0.70]
Silica, quartz 1.14 [1.08 , 1.21]
Overall RR 0.78 [0.71 , 0.85]
0.50
1.00
2.00

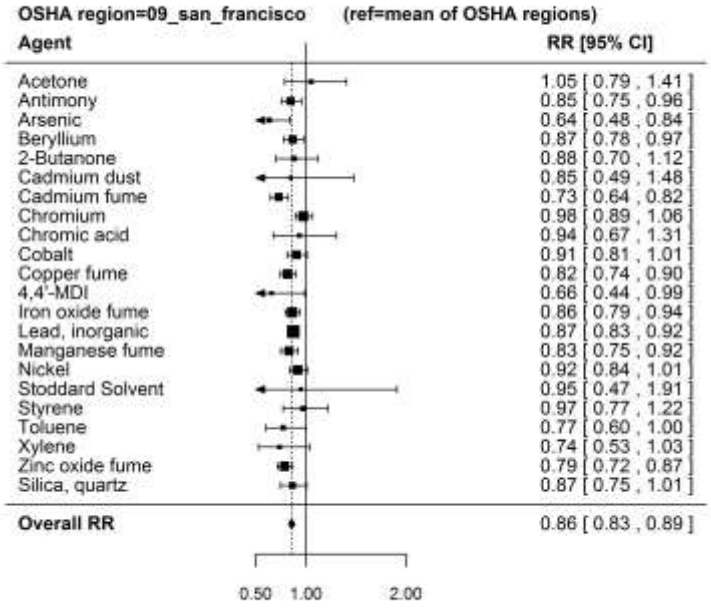

OSHA region=04_atlanta (ref=mean of OSHA regions)
Agent
RR [95% CI]
Acetone 1.11 [0.99 , 1.24]
Antimony 0.83 [0.78 , 0.87]
Arsenic 0.72 [0.62 , 0.85]
Beryllium 0.78 [0.74 , 0.83]
2-Butanone 1.12 [1.02 , 1.24]
Cadmium dust 0.68 [0.53 , 0.87]
Cadmium fume 1.01 [0.94 , 1.08]
Chromium 0.82 [0.78 , 0.86]
Chromic acid 1.09 [0.95 , 1.25]
Cobalt 0.81 [0.76 , 0.85]
Copper fume 0.91 [0.87 , 0.94]
4,4'-MDI 1.09 [0.99 , 1.20]
Iron oxide fume 0.95 [0.91 , 0.98]
Lead, inorganic 0.98 [0.96 , 1.00]
Manganese fume 0.98 [0.94 , 1.02]
Nickel 0.83 [0.78 , 0.87]
Stoddard Solvent 1.05 [0.91 , 1.22]
Styrene 0.99 [0.92 , 1.07]
Toluene 1.08 [1.02 , 1.16]
Xylene 1.11 [1.04 , 1.19]
Zinc oxide fume 0.88 [0.84 , 0.92]
Silica, quartz 1.09 [1.02 , 1.16]
Overall RR 0.94 [0.90 , 0.99]
0.50
1.00
2.00

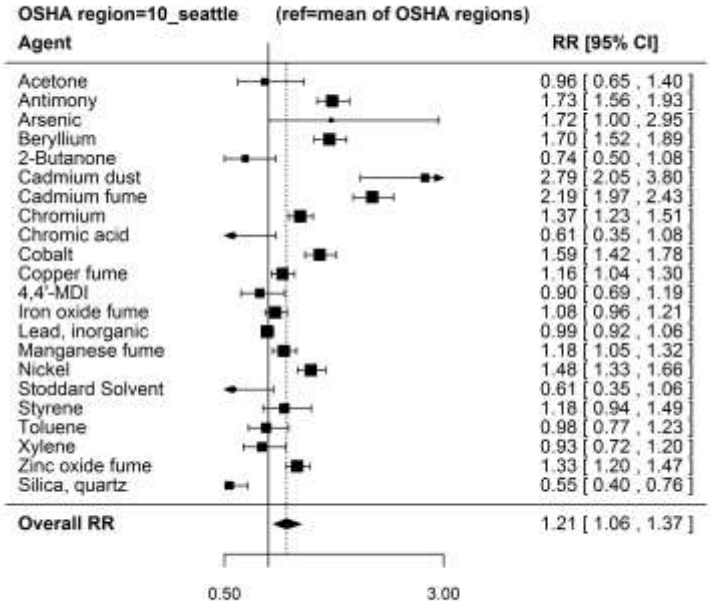

OSHA region=05_chicago (ref=mean of OSHA regions)
Agent
RR [95% CI]
Acetone 0.92 [0.84 , 1.00]
Antimony 0.97 [0.94 , 1.01]
Arsenic 1.34 [1.20 , 1.51]
Beryllium 0.98 [0.95 , 1.02]
2-Butanone 0.95 [0.88 , 1.04]
Cadmium dust 0.48 [0.39 , 0.59]
Cadmium fume 0.90 [0.86 , 0.94]
Chromium 0.99 [0.96 , 1.02]
Chromic acid 1.07 [0.97 , 1.18]
Cobalt 0.97 [0.94 , 1.01]
Copper fume 1.05 [1.02 , 1.07]
4,4'-MDI 1.06 [0.98 , 1.14]
Iron oxide fume 1.05 [1.03 , 1.08]
Lead, inorganic 1.07 [1.05 , 1.08]
Manganese fume 1.04 [1.01 , 1.07]
Nickel 0.99 [0.96 , 1.02]
Stoddard Solvent 1.01 [0.90 , 1.14]
Styrene 1.02 [0.95 , 1.09]
Toluene 0.92 [0.88 , 0.97]
Xylene 0.96 [0.90 , 1.02]
Zinc oxide fume 1.04 [1.01 , 1.07]
Silica, quartz 1.18 [1.13 , 1.24]
Overall RR 1.00 [0.98 , 1.03]
0.50
1.00
2.00


OSHA region=06_dallas (ref=mean of OSHA regions)
Agent
RR [95% CI]
Acetone 1.07 [0.97 , 1.19]
Antimony 1.16 [1.11 , 1.21]
Arsenic 0.95 [0.82 , 1.09]
Beryllium 1.13 [1.08 , 1.19]
2-Butanone 1.06 [0.97 , 1.17]
Cadmium dust 0.92 [0.74 , 1.15]
Cadmium fume 1.16 [1.10 , 1.23]
Chromium 1.14 [1.10 , 1.18]
Chromic acid 1.40 [1.25 , 1.57]
Cobalt 1.12 [1.08 , 1.17]
Copper fume 1.14 [1.10 , 1.18]
4,4'-MDI 1.26 [1.15 , 1.38]
Iron oxide fume 1.15 [1.12 , 1.19]
Lead, inorganic 1.08 [1.06 , 1.10]
Manganese fume 1.18 [1.14 , 1.23]
Nickel 1.13 [1.09 , 1.18]
Stoddard Solvent 1.13 [0.99 , 1.30]
Styrene 1.11 [1.03 , 1.19]
Toluene 1.10 [1.04 , 1.17]
Xylene 1.06 [0.99 , 1.14]
Zinc oxide fume 1.19 [1.15 , 1.23]
Silica, quartz 1.03 [0.97 , 1.11]
Overall RR 1.13 [1.11 , 1.16]
0.50
1.00
2.00


OSHA region=07_kansas_city (ref=mean of OSHA regions)
Agent
RR [95% CI]
Acetone 1.38 [1.18 , 1.61]
Antimony 1.19 [1.11 , 1.28]
Arsenic 0.82 [0.65 , 1.04]
Beryllium 1.17 [1.08 , 1.25]
2-Butanone 1.46 [1.31 , 1.64]
Cadmium dust 1.27 [1.02 , 1.59]
Cadmium fume 1.06 [0.96 , 1.18]
Chromium 1.14 [1.07 , 1.21]
Chromic acid 1.35 [1.16 , 1.58]
Cobalt 1.16 [1.08 , 1.25]
Copper fume 1.10 [1.04 , 1.16]
4,4'-MDI 1.18 [1.03 , 1.35]
Iron oxide fume 1.12 [1.06 , 1.17]
Lead, inorganic 0.99 [0.97 , 1.02]
Manganese fume 1.13 [1.07 , 1.19]
Nickel 1.11 [1.03 , 1.19]
Stoddard Solvent 1.04 [0.85 , 1.27]
Styrene 1.17 [1.03 , 1.32]
Toluene 1.20 [1.11 , 1.30]
Xylene 1.24 [1.15 , 1.35]
Zinc oxide fume 1.18 [1.12 , 1.25]
Silica, quartz 1.19 [1.10 , 1.28]
Overall RR 1.16 [1.11 , 1.21]
0.50
1.00
2.00


OSHA region=08_denver (ref=mean of OSHA regions)
Agent
RR [95% CI]
Acetone 1.11 [1.00 , 1.24]
Antimony 1.59 [1.52 , 1.67]
Arsenic 1.07 [0.93 , 1.24]
Beryllium 1.58 [1.51 , 1.66]
2-Butanone 1.35 [1.20 , 1.52]
Cadmium dust 3.01 [2.59 , 3.51]
Cadmium fume 1.82 [1.73 , 1.92]
Chromium 1.48 [1.42 , 1.54]
Chromic acid 0.96 [0.81 , 1.14]
Cobalt 1.58 [1.51 , 1.65]
Copper fume 1.44 [1.39 , 1.50]
4,4'-MDI 1.21 [1.11 , 1.33]
Iron oxide fume 1.41 [1.36 , 1.46]
Lead, inorganic 1.16 [1.13 , 1.19]
Manganese fume 1.41 [1.35 , 1.47]
Nickel 1.52 [1.45 , 1.59]
Stoddard Solvent 1.45 [1.26 , 1.67]
Styrene 1.18 [1.07 , 1.30]
Toluene 1.25 [1.16 , 1.34]
Xylene 1.26 [1.16 , 1.37]
Zinc oxide fume 1.51 [1.45 , 1.56]
Silica, quartz 1.11 [1.04 , 1.19]
Overall RR 1.39 [1.30 , 1.49]
0.50
4.00


OSHA region=09_san_francisco (ref=mean of OSHA regions)
Agent
RR [95% CI]
Acetone 1.05 [0.79 , 1.41]
Antimony 0.85 [0.75 , 0.96]
Arsenic 0.64 [0.48 , 0.84]
Beryllium 0.87 [0.78 , 0.97]
2-Butanone 0.88 [0.70 , 1.12]
Cadmium dust 0.85 [0.49 , 1.48]
Cadmium fume 0.73 [0.64 , 0.82]
Chromium 0.98 [0.89 , 1.06]
Chromic acid 0.94 [0.67 , 1.31]
Cobalt 0.91 [0.81 , 1.01]
Copper fume 0.82 [0.74 , 0.90]
4,4'-MDI 0.66 [0.44 , 0.99]
Iron oxide fume 0.86 [0.79 , 0.94]
Lead, inorganic 0.87 [0.83 , 0.92]
Manganese fume 0.83 [0.75 , 0.92]
Nickel 0.92 [0.84 , 1.01]
Stoddard Solvent 0.95 [0.47 , 1.91]
Styrene 0.97 [0.77 , 1.22]
Toluene 0.77 [0.60 , 1.00]
Xylene 0.74 [0.53 , 1.03]
Zinc oxide fume 0.79 [0.72 , 0.87]
Silica, quartz 0.87 [0.75 , 1.01]
Overall RR 0.86 [0.83 , 0.89]
0.50
1.00
2.00


OSHA region=10_seattle (ref=mean of OSHA regions)
Agent
RR [95% CI]
Acetone 0.96 [0.65 , 1.40]
Antimony 1.73 [1.56 , 1.93]
Arsenic 1.72 [1.00 , 2.95]
Beryllium 1.70 [1.52 , 1.89]
2-Butanone 0.74 [0.50 , 1.08]
Cadmium dust 2.79 [2.05 , 3.80]
Cadmium fume 2.19 [1.97 , 2.43]
Chromium 1.37 [1.23 , 1.51]
Chromic acid 0.61 [0.35 , 1.08]
Cobalt 1.59 [1.42 , 1.78]
Copper fume 1.16 [1.04 , 1.30]
4,4'-MDI 0.90 [0.69 , 1.19]
Iron oxide fume 1.08 [0.96 , 1.21]
Lead, inorganic 0.99 [0.92 , 1.06]
Manganese fume 1.18 [1.05 , 1.32]
Nickel 1.48 [1.33 , 1.66]
Stoddard Solvent 0.61 [0.35 , 1.06]
Styrene 1.18 [0.94 , 1.49]
Toluene 0.98 [0.77 , 1.23]
Xylene 0.93 [0.72 , 1.20]
Zinc oxide fume 1.33 [1.20 , 1.47]
Silica, quartz 0.55 [0.40 , 0.76]
Overall RR 1.21 [1.06 , 1.37]
0.50
3.00

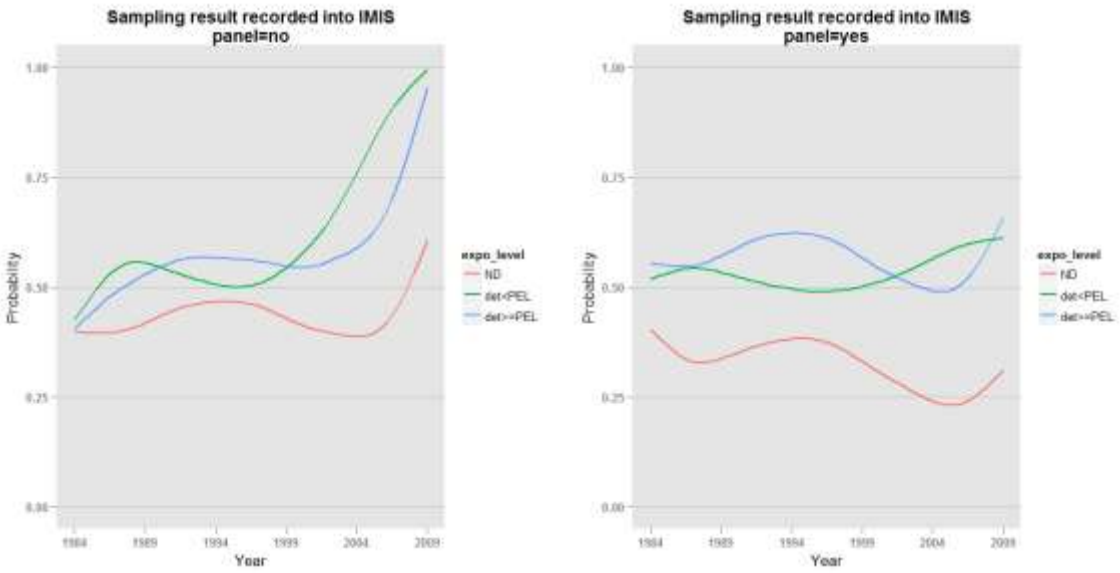


Figure S2: Probability of a CEHD sampling result being recorded into IMIS by year, stratified by panel status and level of exposure. Predicted probabilities were estimated for each year, based on median sampling duration (342 minutes) and on the reference level of each categorical variable (for OSHA region and chemical agent variables, categories closest to the population average were chosen, i.e. Chicago and 2-butanone, respectively).