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Mr. Harvey M. Richmond
EPA/OAQPS
MD-15
Research Triangle Park, NC 27711

Subject: *Sensitivity of Health Risk Estimates to Air Quality Adjustment Procedure*

MASTER

Dear Harvey,

This letter is a summary of risk results associated with exposure estimates produced by IT Air Quality Services, Inc. (IT) using two-parameter Weibull and quadratic air quality adjustment procedures (AQAPs). IT developed new exposure estimates for children and child-occurrences, six urban areas (Houston, Los Angeles, New York City, Philadelphia, St. Louis, and Washington, D.C.), and five alternative air quality scenarios (three scenarios of the n^{th} highest average daily maximum of 0.084 ppm, for $n = 3, 5, \text{ and } 7$; the 3^{rd} highest average daily maximum of 0.094 ppm; and the current 1-hr, 1 expected exceedance, 0.124 ppm standard). In all cases, the Weibull and quadratic results are compared to previous results, which are based on a proportional AQAP.

For lung function and symptoms endpoints, risk estimates associated with the Weibull and quadratic AQAPs tend to be higher than those for the proportional AQAP. Also, the Weibull and quadratic risk results tend to be about the same. For hospital admissions, risk estimates associated with the Weibull and quadratic AQAPs are higher than those for the proportional AQAP, and the Weibull admissions estimates are larger than those for the quadratic procedure.

The exposure-response relationships are the same as those used earlier (Whitfield, 1997; Whitfield et al., 1996). Results presented in tables cover (1) lung function and symptoms among children living in six urban areas and (2) hospital admissions of asthmatics in New York City. Procedures for estimating exposure and air quality were developed by Johnson et al. (1997). Exposure and air quality estimates for Weibull and quadratic AQAPs developed by Johnson (1997) were essential for developing the risk results presented here. Earlier reports (Whitfield, 1997; Whitfield et al., 1996) describe in detail the methods used to develop risk results and limitations of the methods and results; these descriptions apply to this analysis of the proportional, Weibull, and quadratic AQAPs. This analysis further supplements earlier results for 6 standards of the n^{th} highest average daily maximum form (Whitfield, 1997).

Consistent with earlier work, we again considered four acute health endpoints associated with short-term (1- or 8-hr) exposures to ozone. The population of interest is active children exercising outdoors. The endpoints are:

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- Moderate-to-severe cough (MCF) for 1-hr exposures at heavy exertion (equivalent ventilation rate ≥ 30 L/min/m²) [underlying exposure-response relationship is based on McDonnell et al. (1983)];
- Moderate-to-severe chest pain on deep inspiration (MPD) for 1-hr exposures at moderate exertion (equivalent ventilation rate between 16-30 L/min/m²) [underlying exposure-response relationship is based on Seal et al. (1993)];
- Forced expiratory volume in 1 sec (FEV₁) decrement $\geq 15\%$ (FEV₁ $\geq 15\%$) for 8-hr exposures at moderate exertion (equivalent ventilation rate between 13-27 L/min/m²); and
- Forced expiratory volume in 1 sec (FEV₁) decrement $\geq 20\%$ (FEV₁ $\geq 20\%$) for 8-hr exposures at moderate exertion.

The underlying exposure-response relationships for both of the FEV₁ endpoints are based on Folinsbee et al. (1988), Horstman et al. (1990), and McDonnell et al. (1991).

Headcount Risk Results

While previous work focused on aggregated (across nine urban areas) risk results, this work presents results for each of the six urban areas named above and aggregated results. The format of the results are first explained for Houston and the 8HA3H-0.084 scenario (an alternative NAAQS: 8-hr averaging time, 3rd highest average daily maximum of 0.084 ppm ozone) in Table 1. Aggregated results, listed in Tables 2-11, are in the same format as area-specific results. Results for all urban areas are listed in Tables A1-A60 in the Appendix.

Table 1 (which, for uniformity, is repeated as Table A37) lists risk results for outdoor children in the Houston area. The table contains 4 "blocks" of information, one block for each of the endpoints named earlier. For each endpoint, there are three columns of results, one each for the proportional, Weibull, and quadratic AQAPs. The population, length of exposure, and exertion level further characterize each health endpoint. Three pairs of rows of data follow the heading for each endpoint. The first row lists the averages of the medians of ten risk distributions that were calculated for each scenario. There are 10 risk distributions because there are ten sets of exposure estimates for each scenario (developed by IT using a probabilistic version of the National Ambient Air Quality Standards Exposure Model for Ozone, pNEM/O₃). The second row lists the 90% credible intervals (CIs), which again are averages of the ten 0.05 and 0.95 fractiles calculated for each scenario. For example, for the proportional results and the moderate-to-severe cough endpoint, the average of the medians is 2,100 children; the average of the 0.05 fractiles is 750 children; and the average of the 0.95 fractiles is 3,200 children. Thus, the 90% CI of the risk is approximately 750-3,200 children.

The next two pairs of rows (refer to them as rows 3-6) compare proportional results to results for the Weibull and quadratic AQAPs, respectively. Row 3 lists the changes (in numbers of children) for the Weibull and quadratic results relative to the proportional results. Row 4 lists

the corresponding 90% CIs. Row 5 lists the changes (in percent of children), and row 6 lists the corresponding 90% CIs.

Table 2 lists the results aggregated across six urban areas for the 8 hr, 3rd highest daily maximum, 0.094 ppm standard (called the 8HA3H-0.094 or 8394 scenario). The format is exactly the same as that for Table 1. Tables 3-11 list aggregated risk results for the following cases:

- The 8HA3H-0.094 scenario and child-occurrences (Table 3),
- The 8-hr averaging time, 7th highest average daily maximum of 0.084 ppm ozone scenario (called the 8HA7H-0.084 or 8784 scenario) and children (Table 4),
- The 8HA7H-0.084 scenario and child-occurrences (Table 5),
- The 8-hr averaging time, 5th highest average daily maximum of 0.084 ppm ozone scenario (called the 8HA5H-0.084 or 8584 scenario) and children (Table 6),
- The 8HA5H-0.084 scenario and child-occurrences (Table 7),
- The 8-hr averaging time, 3rd highest average daily maximum of 0.084 ppm ozone scenario (called the 8HA3H-0.084 or 8384 scenario) and children (Table 8),
- The 8HA3H-0.084 scenario and child-occurrences (Table 9),
- The 1-hr averaging time, 1 expected exceedance, 0.124 ppm scenario (called the 1H1EX-0.124 or 1124 scenario, which is the current standard) and children (Table 10), and
- The 1H1EX-0.124 scenario and child-occurrences (Table 11).

Risk results for each urban area are listed in the Appendix in Tables A1-A60. The tables are organized as follows:

- Results for scenario 8HA3H-0.094 and children are listed in Tables A1-A6,
- Results for scenario 8HA3H-0.094 and child-occurrences are listed in Tables A7-A12,
- Results for scenario 8HA7H-0.084 and children are listed in Tables A13-A18,
- Results for scenario 8HA7H-0.084 and child-occurrences are listed in Tables A19-A24,
- Results for scenario 8HA5H-0.084 and children are listed in Tables A25-A30,

- Results for scenario 8HA5H-0.084 and child-occurrences are listed in Tables A31-A36,
- Results for scenario 8HA3H-0.084 and children are listed in Tables A37-A42,
- Results for scenario 8HA3H-0.084 and child-occurrences are listed in Tables A43-A48,
- Results for scenario 1H1EX-0.124 and children are listed in Tables A49-A54, and
- Results for scenario 1H1EX-0.124 and child-occurrences are listed in Tables A55-A60.

Excess Hospital Admissions of Asthmatics

The hospital admissions model again is based on (1) regression coefficients and corresponding standard errors developed by Thurston et al. (1992) and (2) 1-h daily maximum ozone concentrations developed by Johnson (1997). The model applies only to the New York City metropolitan area and includes two types of respiratory admissions: asthmatics and members of the general population (including asthmatics) for any of a number of respiratory ailments (i.e., acute bronchitis or bronchiolitis, pneumonia, or chronic obstructive pulmonary disease not related to asthma). Results only for the admission of asthmatics are included in this letter report. All results are based on actual and estimated air quality at the Queens County monitor (monitor 9, which was used by Thurston et al. 1992).

The main results for hospital admissions are shown in Tables 12-18. Table 12 lists the risk distributions for 5 scenarios, 3 AQAPs (proportional, Weibull, and quadratic) for each standard, and a background ozone level of 0.04 ppm. A 5-character abbreviation distinguishes the standard-procedure combinations: P indicates proportional, W indicates Weibull, and Q denotes quadratic. Each distribution is for the number of excess hospital admissions of asthmatics. The bottom two rows of the table list the mean and standard deviation of each distribution. Table 13 lists corresponding results for a background ozone level of 0 ppm.

Tables 14-18 compare results for the admissions of New York City asthmatics based on proportional, Weibull, and quadratic AQAPs for each of five standards. In each table, the comparisons include estimates of the differences in admissions associated with the quadratic and Weibull AQAPs vs. results for the proportional AQAP.

The estimates in Tables 12 and 13 are model results that have been rounded to the nearest whole number. This level of precision is presented because the percent reduction calculations in Tables 14-18 could be distorted if results in Tables 12 and 13 were rounded to the nearest multiple of 10 or to 2 significant digits before completing the final calculations, which are percentage changes from the proportional AQAP results. The percent reduction estimates have been rounded to 2 significant digits.

Table 17 shows results for just attaining the 8H3AH-0.084 standard subject to three AQAPs (proportional, Weibull, and quadratic). The Weibull and quadratic AQAPs result in higher estimates of excess admissions than the proportional procedure, and the Weibull estimates are higher than those for the quadratic procedure. The excess admissions estimates come from the hospital admissions model. The estimates for all admissions are based on (1) the 14-16 thousand admissions per ozone season estimates provided by Thurston (1995) and (2) excess admissions attributable to exposures at ozone levels >0.04 ppm. The median number of admissions of asthmatics for any respiratory-related reason is 14,700 [which is approximately equal to 15,000 (the median of total admissions in the As-Is scenario) *minus* 388 (the median number of excess admissions in the As-Is scenario attributable to ozone exposure at concentrations greater than the estimated 0.04 ppm background level; from Whitfield et al. 1996) *plus* 109 (the median number of excess admissions associated with attainment of the 8H3AH-0.084 standard for ozone exposures at concentrations > 0.04 ppm)].

The discussion presented here mirrors discussion in a previous analysis (Whitfield, 1997). The limitations discussed in that analysis are also relevant to this analysis. If you need additional analysis, please give me a call.

Sincerely,

Ronald G. Whitfield, Ph.D.

Manager, Decision and Risk Analysis Section
Decision and Information Sciences Division

RGW:st

Attachments: References, Tables 1-18 Tables A1-A60

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TABLE 1 Risk Results for Houston Children, Scenario 8H3AH-0.084

	Proportional	Weibull	Quadratic
Moderate/Severe Cough, Children, 1 Hr Exposures, Heavy Exertion			
Median ^a	2,100	3,200	2,800
(90% CI) ^b	(750 to 3,200)	(1,100 to 4,900)	(990 to 4,400)
Change ^c	-	1,100	750
(90% CI) ^b	-	(360 to 1,700)	(240 to 1,200)
% Change ^c	-	53	36
(90% CI) ^b	-	(48 , 54)	(32 , 37)
Moderate/Severe Chest Pain, Children, 1 Hr Exposures, Moderate Exertion			
Median ^a	3,000	2,100	1,900
(90% CI) ^b	(610 to 8,900)	(270 to 7,700)	(180 to 7,300)
Change ^c	-	-820	-1,100
(90% CI) ^b	-	(-340 to -1,200)	(-430 to -1,600)
% Change ^c	-	-28	-37
(90% CI) ^b	-	(-56 , -13)	(-71 , -18)
Moderate Lung Function Decrement ($\geq 15\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	14,000	14,000	13,000
(90% CI) ^b	(6,800 to 24,000)	(6,700 to 26,000)	(6,200 to 24,000)
Change ^c	-	320	-620
(90% CI) ^b	-	(-120 to 1,300)	(-640 to -180)
% Change ^c	-	2	-5
(90% CI) ^b	-	(-2 , 5)	(-9 , -1)
Large Lung Function Decrement ($\geq 20\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	4,800	4,500	4,100
(90% CI) ^b	(1,900 to 11,000)	(1,600 to 11,000)	(1,500 to 10,000)
Change ^c	-	-280	-700
(90% CI) ^b	-	(-220 to 23)	(-390 to -820)
% Change ^c	-	-6	-15
(90% CI) ^b	-	(-12 , 0)	(-21 , -8)

^aThe average of ten median estimates.^b90% CI denotes the 90% credible interval.^cChange relative to the proportional results.

TABLE 2 Aggregate Results Across 6 Urban Areas for Children, Scenario 8HA3H-0.094

	Proportional	Weibull	Quadratic
Moderate/Severe Cough, Children, 1 Hr Exposures, Heavy Exertion			
Median ^a	30,000	39,000	36,000
(90% CI) ^b	(11,000 to 46,000)	(14,000 to 59,000)	(13,000 to 54,000)
Change ^c	-	8,700	5,600
(90% CI) ^b	-	(3,000 to 14,000)	(2,000 to 8,600)
% Change ^c	-	-29	-19
(90% CI) ^b	-	(-30 to -27)	(-19 to -18)
Moderate/Severe Chest Pain, Children, 1 Hr Exposures, Moderate Exertion			
Median ^a	31,000	25,000	25,000
(90% CI) ^b	(5,600 to 97,000)	(3,800 to 89,000)	(3,300 to 88,000)
Change ^c	-	-5,200	-5,900
(90% CI) ^b	-	(-1,900 to -8,800)	(-2,300 to -9,700)
% Change ^c	-	17	19
(90% CI) ^b	-	(9 to 33)	(10 to 41)
Moderate Lung Function Decrement ($\geq 15\%$ FEV1 decrement), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	180,000	190,000	190,000
(90% CI) ^b	(93,000 to 310,000)	(100,000 to 340,000)	(98,000 to 320,000)
Change ^c	-	16,000	10,000
(90% CI) ^b	-	(7,900 to 30,000)	(5,000 to 18,000)
% Change ^c	-	-9	-6
(90% CI) ^b	-	(-10 to -8)	(-6 to -5)
Large Lung Function Decrement ($\geq 20\%$ FEV1 decrement), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	67,000	72,000	70,000
(90% CI) ^b	(27,000 to 140,000)	(28,000 to 160,000)	(28,000 to 150,000)
Change ^c	-	5,200	3,400
(90% CI) ^b	-	(1,800 to 13,000)	(1,200 to 8,100)
% Change ^c	-	-8	-5
(90% CI) ^b	-	(-9 to -7)	(-6 to -5)

^aThe average of ten median estimates.^b90% CI denotes the 90% credible interval.^cChange relative to the proportional results.

TABLE 3 Aggregate Results Across 6 Urban Areas for Child-Occurrences, Scenario 8HA3H-0.094

	Proportional	Weibull	Quadratic
Moderate/Severe Cough, Children, 1 Hr Exposures, Heavy Exertion			
Median ^a	48,000	75,000	66,000
(90% CI) ^b	(17,000 to 74,000)	(26,000 to 120,000)	(23,000 to 100,000)
Change ^c	-	27,000	18,000
(90% CI) ^b	-	(8,900 to 43,000)	(6,100 to 28,000)
% Change ^c	-	-57	-37
(90% CI) ^b	-	(-58 to -53)	(-38 to -36)
Moderate/Severe Chest Pain, Children, 1 Hr Exposures, Moderate Exertion			
Median ^a	160,000	200,000	190,000
(90% CI) ^b	(14,000 to 1,100,000)	(12,000 to 1,700,000)	(12,000 to 1,500,000)
Change ^c	-	42,000	36,000
(90% CI) ^b	-	(-1,800 to 580,000)	(-1,800 to 380,000)
% Change ^c	-	-26	-23
(90% CI) ^b	-	(-52 to 13)	(-34 to 13)
Moderate Lung Function Decrement ($\geq 15\%$ FEV1 decrement), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	720,000	1,100,000	1,000,000
(90% CI) ^b	(290,000 to 1,500,000)	(430,000 to 2,400,000)	(390,000 to 2,100,000)
Change ^c	-	410,000	280,000
(90% CI) ^b	-	(140,000 to 920,000)	(110,000 to 600,000)
% Change ^c	-	-57	-39
(90% CI) ^b	-	(-62 to -50)	(-40 to -37)
Large Lung Function Decrement ($\geq 20\%$ FEV1 decrement), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	150,000	200,000	190,000
(90% CI) ^b	(52,000 to 470,000)	(69,000 to 710,000)	(69,000 to 640,000)
Change ^c	-	52,000	49,000
(90% CI) ^b	-	(17,000 to 240,000)	(17,000 to 170,000)
% Change ^c	-	-36	-33
(90% CI) ^b	-	(-51 to -32)	(-37 to -32)

^aThe average of ten median estimates.^b90% CI denotes the 90% credible interval.^cChange relative to the proportional results.

TABLE 4 Aggregate Results Across 6 Urban Areas for Children, Scenario 8HA7H-0.084

	Proportional	Weibull	Quadratic
Moderate/Severe Cough, Children, 1 Hr Exposures, Heavy Exertion			
Median ^a	29,000	35,000	33,000
(90% CI) ^b	(11,000 to 45,000)	(13,000 to 54,000)	(12,000 to 50,000)
Change ^c	-	5,700	3,500
(90% CI) ^b	-	(1,800 to 9,000)	(1,100 to 5,500)
% Change ^c	-	-19	-12
(90% CI) ^b	-	(-20 to -17)	(-12 to -10)
Moderate/Severe Chest Pain, Children, 1 Hr Exposures, Moderate Exertion			
Median ^a	30,000	22,000	22,000
(90% CI) ^b	(5,600 to 97,000)	(3,100 to 82,000)	(2,800 to 82,000)
Change ^c	-	-8,100	-8,400
(90% CI) ^b	-	(-2,600 to -15,000)	(-2,900 to -15,000)
% Change ^c	-	27	28
(90% CI) ^b	-	(16 to 46)	(16 to 51)
Moderate Lung Function Decrement ($\geq 15\%$ FEV1 decrement), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	180,000	170,000	170,000
(90% CI) ^b	(92,000 to 300,000)	(89,000 to 310,000)	(88,000 to 300,000)
Change ^c	-	-3,000	-4,800
(90% CI) ^b	-	(-3,800 to 860)	(-4,000 to -4,000)
% Change ^c	-	2	3
(90% CI) ^b	-	(0 to 4)	(1 to 4)
Large Lung Function Decrement ($\geq 20\%$ FEV1 decrement), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	67,000	62,000	63,000
(90% CI) ^b	(27,000 to 140,000)	(24,000 to 140,000)	(24,000 to 140,000)
Change ^c	-	-4,100	-3,900
(90% CI) ^b	-	(-2,300 to -4,500)	(-2,100 to -5,200)
% Change ^c	-	6	6
(90% CI) ^b	-	(3 to 9)	(4 to 8)

^aThe average of ten median estimates.^b90% CI denotes the 90% credible interval.^cChange relative to the proportional results.

TABLE 5 Aggregate Results Across 6 Urban Areas for Child-Occurrences, Scenario 8HA7H-0.084

	Proportional	Weibull	Quadratic
Moderate/Severe Cough, Children, 1 Hr Exposures, Heavy Exertion			
Median ^a	46,000	65,000	58,000
(90% CI) ^b	(16,000 to 72,000)	(22,000 to 100,000)	(20,000 to 91,000)
Change ^c	-	19,000	12,000
(90% CI) ^b	-	(6,000 to 30,000)	(3,900 to 19,000)
% Change ^c	-	-41	-26
(90% CI) ^b	-	(-42 to -37)	(-26 to -23)
Moderate/Severe Chest Pain, Children, 1 Hr Exposures, Moderate Exertion			
Median ^a	150,000	170,000	160,000
(90% CI) ^b	(13,000 to 1,100,000)	(9,300 to 1,500,000)	(9,100 to 1,300,000)
Change ^c	-	14,000	1,000
(90% CI) ^b	-	(-4,100 to 390,000)	(-4,200 to 240,000)
% Change ^c	-	-9	-7
(90% CI) ^b	-	(-36 to 31)	(-22 to 32)
Moderate Lung Function Decrement ($\geq 15\%$ FEV1 decrement), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	700,000	980,000	870,000
(90% CI) ^b	(280,000 to 1,500,000)	(360,000 to 2,100,000)	(330,000 to 1,800,000)
Change ^c	-	270,000	170,000
(90% CI) ^b	-	(83,000 to 640,000)	(55,000 to 380,000)
% Change ^c	-	-39	-24
(90% CI) ^b	-	(-44 to -30)	(-26 to -20)
Large Lung Function Decrement ($\geq 20\%$ FEV1 decrement), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	140,000	160,000	160,000
(90% CI) ^b	(51,000 to 460,000)	(56,000 to 600,000)	(56,000 to 550,000)
Change ^c	-	19,000	18,000
(90% CI) ^b	-	(4,600 to 140,000)	(4,600 to 94,000)
% Change ^c	-	-14	-13
(90% CI) ^b	-	(-31 to -9)	(-21 to -9)

^aThe average of ten median estimates.^b90% CI denotes the 90% credible interval.^cChange relative to the proportional results.

TABLE 6 Aggregate Results Across 6 Urban Areas for Children, Scenario 8HA5H-0.084

	Proportional	Weibull	Quadratic
Moderate/Severe Cough, Children, 1 Hr Exposures, Heavy Exertion			
Median ^a	26,000	32,000	30,000
(90% CI) ^b	(9,200 to 39,000)	(11,000 to 49,000)	(11,000 to 46,000)
Change ^c	-	6,400	4,200
(90% CI) ^b	-	(2,100 to 10,000)	(1,400 to 6,600)
% Change ^c	-	-25	-16
(90% CI) ^b	-	(-26 to -22)	(-17 to -15)
Moderate/Severe Chest Pain, Children, 1 Hr Exposures, Moderate Exertion			
Median ^a	25,000	19,000	18,000
(90% CI) ^b	(3,900 to 86,000)	(2,100 to 74,000)	(1,700 to 73,000)
Change ^c	-	-5,900	-6,800
(90% CI) ^b	-	(-1,700 to -11,000)	(-2,100 to -12,000)
% Change ^c	-	24	27
(90% CI) ^b	-	(13 to 45)	(14 to 55)
Moderate Lung Function Decrement ($\geq 15\%$ FEV1 decrement), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	150,000	160,000	150,000
(90% CI) ^b	(75,000 to 260,000)	(76,000 to 280,000)	(75,000 to 270,000)
Change ^c	-	6,000	2,300
(90% CI) ^b	-	(1,400 to 15,000)	(190 to 6,500)
% Change ^c	-	-4	-2
(90% CI) ^b	-	(-6 to -2)	(-2 to 0)
Large Lung Function Decrement ($\geq 20\%$ FEV1 decrement), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	52,000	52,000	52,000
(90% CI) ^b	(20,000 to 120,000)	(19,000 to 120,000)	(19,000 to 120,000)
Change ^c	-	-55	-490
(90% CI) ^b	-	(-570 to 3,400)	(-660 to 1,200)
% Change ^c	-	0	1
(90% CI) ^b	-	(-3 to 3)	(-1 to 3)

^aThe average of ten median estimates.^b90% CI denotes the 90% credible interval.^cChange relative to the proportional results.

TABLE 7 Aggregate Results Across 6 Urban Areas for Child-Occurrences, Scenario 8HA5H-0.084

	Proportional	Weibull	Quadratic
Moderate/Severe Cough, Children, 1 Hr Exposures, Heavy Exertion			
Median ^a	39,000	59,000	52,000
(90% CI) ^b	(14,000 to 61,000)	(20,000 to 93,000)	(18,000 to 82,000)
Change ^c	-	20,000	13,000
(90% CI) ^b	-	(6,400 to 32,000)	(4,300 to 21,000)
% Change ^c	-	-52	-34
(90% CI) ^b	-	(-53 to -47)	(-35 to -32)
Moderate/Severe Chest Pain, Children, 1 Hr Exposures, Moderate Exertion			
Median ^a	120,000	140,000	130,000
(90% CI) ^b	(8,600 to 900,000)	(6,200 to 1,300,000)	(6,000 to 1,200,000)
Change ^c	-	19,000	16,000
(90% CI) ^b	-	(-2,400 to 430,000)	(-2,600 to 280,000)
% Change ^c	-	-17	-14
(90% CI) ^b	-	(-48 to 28)	(-31 to 31)
Moderate Lung Function Decrement ($\geq 15\%$ FEV1 decrement), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	560,000	850,000	750,000
(90% CI) ^b	(210,000 to 1,200,000)	(300,000 to 1,900,000)	(280,000 to 1,600,000)
Change ^c	-	290,000	200,000
(90% CI) ^b	-	(91,000 to 690,000)	(65,000 to 440,000)
% Change ^c	-	-53	-35
(90% CI) ^b	-	(-58 to -43)	(-37 to -31)
Large Lung Function Decrement ($\geq 20\%$ FEV1 decrement), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	99,000	120,000	120,000
(90% CI) ^b	(35,000 to 350,000)	(41,000 to 500,000)	(41,000 to 460,000)
Change ^c	-	23,000	22,000
(90% CI) ^b	-	(6,000 to 160,000)	(6,300 to 110,000)
% Change ^c	-	-23	-22
(90% CI) ^b	-	(-44 to -17)	(-32 to -18)

^aThe average of ten median estimates.^b90% CI denotes the 90% credible interval.^cChange relative to the proportional results.

TABLE 8 Aggregate Results Across 6 Urban Areas for Children, Scenario 8HA3H-0.084

	Proportional	Weibull	Quadratic
Moderate/Severe Cough, Children, 1 Hr Exposures, Heavy Exertion			
Median ^a	26,000	32,000	30,000
(90% CI) ^b	(9,200 to 39,000)	(11,000 to 49,000)	(11,000 to 46,000)
Change ^c	-	6,400	4,200
(90% CI) ^b	-	(2,100 to 10,000)	(1,400 to 6,600)
% Change ^c	-	-25	-16
(90% CI) ^b	-	(-26 to -22)	(-17 to -15)
Moderate/Severe Chest Pain, Children, 1 Hr Exposures, Moderate Exertion			
Median ^a	25,000	19,000	18,000
(90% CI) ^b	(3,900 to 86,000)	(2,100 to 74,000)	(1,700 to 73,000)
Change ^c	-	-5,900	-6,800
(90% CI) ^b	-	(-1,700 to -11,000)	(-2,100 to -12,000)
% Change ^c	-	24	27
(90% CI) ^b	-	(13 to 45)	(14 to 55)
Moderate Lung Function Decrement ($\geq 15\%$ FEV1 decrement), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	150,000	160,000	150,000
(90% CI) ^b	(75,000 to 260,000)	(76,000 to 280,000)	(75,000 to 270,000)
Change ^c	-	6,000	2,300
(90% CI) ^b	-	(1,400 to 15,000)	(190 to 6,500)
% Change ^c	-	-4	-2
(90% CI) ^b	-	(-6 to -2)	(-2 to 0)
Large Lung Function Decrement ($\geq 20\%$ FEV1 decrement), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	52,000	52,000	52,000
(90% CI) ^b	(20,000 to 120,000)	(19,000 to 120,000)	(19,000 to 120,000)
Change ^c	-	-55	-490
(90% CI) ^b	-	(-570 to 3,400)	(-660 to 1,200)
% Change ^c	-	0	1
(90% CI) ^b	-	(-3 to 3)	(-1 to 3)

^aThe average of ten median estimates.^b90% CI denotes the 90% credible interval.^cChange relative to the proportional results.

TABLE 9 Aggregate Results Across 6 Urban Areas for Child-Occurrences, Scenario 8HA3H-0.084

	Proportional	Weibull	Quadratic
Moderate/Severe Cough, Children, 1 Hr Exposures, Heavy Exertion			
Median ^a	39,000	59,000	52,000
(90% CI) ^b	(14,000 to 61,000)	(20,000 to 93,000)	(18,000 to 82,000)
Change ^c	-	20,000	13,000
(90% CI) ^b	-	(6,400 to 32,000)	(4,300 to 21,000)
% Change ^c	-	-52	-34
(90% CI) ^b	-	(-53 to -47)	(-35 to -32)
Moderate/Severe Chest Pain, Children, 1 Hr Exposures, Moderate Exertion			
Median ^a	120,000	140,000	130,000
(90% CI) ^b	(8,600 to 900,000)	(6,200 to 1,300,000)	(6,000 to 1,200,000)
Change ^c	-	19,000	16,000
(90% CI) ^b	-	(-2,400 to 430,000)	(-2,600 to 280,000)
% Change ^c	-	-17	-14
(90% CI) ^b	-	(-48 to 28)	(-31 to 31)
Moderate Lung Function Decrement ($\geq 15\%$ FEV1 decrement), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	560,000	850,000	750,000
(90% CI) ^b	(210,000 to 1,200,000)	(300,000 to 1,900,000)	(280,000 to 1,600,000)
Change ^c	-	290,000	200,000
(90% CI) ^b	-	(91,000 to 690,000)	(65,000 to 440,000)
% Change ^c	-	-53	-35
(90% CI) ^b	-	(-58 to -43)	(-37 to -31)
Large Lung Function Decrement ($\geq 20\%$ FEV1 decrement), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	99,000	120,000	120,000
(90% CI) ^b	(35,000 to 350,000)	(41,000 to 500,000)	(41,000 to 460,000)
Change ^c	-	23,000	22,000
(90% CI) ^b	-	(6,000 to 160,000)	(6,300 to 110,000)
% Change ^c	-	-23	-22
(90% CI) ^b	-	(-44 to -17)	(-32 to -18)

^aThe average of ten median estimates.^b90% CI denotes the 90% credible interval.^cChange relative to the proportional results.

TABLE 10 Aggregate Results Across 6 Urban Areas for Children, Scenario 1H1EX-0.124

	Proportional	Weibull	Quadratic
Moderate/Severe Cough, Children, 1 Hr Exposures, Heavy Exertion			
Median ^a	24,000	42,000	36,000
(90% CI) ^b	(8,700 to 37,000)	(15,000 to 64,000)	(13,000 to 55,000)
Change ^c	-	18,000	12,000
(90% CI) ^b	-	(6,500 to 27,000)	(4,700 to 18,000)
% Change ^c	-	-73	-51
(90% CI) ^b	-	(-73 to -74)	(-50 to -54)
Moderate/Severe Chest Pain, Children, 1 Hr Exposures, Moderate Exertion			
Median ^a	23,000	27,000	27,000
(90% CI) ^b	(3,300 to 80,000)	(3,800 to 92,000)	(4,000 to 91,000)
Change ^c	-	3,900	3,900
(90% CI) ^b	-	(530 to 11,000)	(660 to 10,000)
% Change ^c	-	-17	-17
(90% CI) ^b	-	(-14 to -16)	(-13 to -20)
Moderate Lung Function Decrement ($\geq 15\%$ FEV1 decrement), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	140,000	210,000	200,000
(90% CI) ^b	(73,000 to 250,000)	(110,000 to 360,000)	(100,000 to 330,000)
Change ^c	-	65,000	52,000
(90% CI) ^b	-	(37,000 to 110,000)	(30,000 to 82,000)
% Change ^c	-	-45	-36
(90% CI) ^b	-	(-42 to -50)	(-33 to -41)
Large Lung Function Decrement ($\geq 20\%$ FEV1 decrement), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	52,000	80,000	75,000
(90% CI) ^b	(20,000 to 120,000)	(32,000 to 170,000)	(31,000 to 160,000)
Change ^c	-	28,000	24,000
(90% CI) ^b	-	(12,000 to 55,000)	(10,000 to 45,000)
% Change ^c	-	-54	-45
(90% CI) ^b	-	(-48 to -58)	(-39 to -50)

^aThe average of ten median estimates.^b90% CI denotes the 90% credible interval.^cChange relative to the proportional results.

TABLE 11 Aggregate Results Across 6 Urban Areas for Child-Occurrences, Scenario 1H1EX-0.124

	Proportional	Weibull	Quadratic
Moderate/Severe Cough, Children, 1 Hr Exposures, Heavy Exertion			
Median ^a	37,000	84,000	66,000
(90% CI) ^b	(13,000 to 57,000)	(29,000 to 130,000)	(23,000 to 100,000)
Change ^c	-	47,000	29,000
(90% CI) ^b	-	(16,000 to 73,000)	(10,000 to 45,000)
% Change ^c	-	-126	-79
(90% CI) ^b	-	(-127 to -122)	(-79 to -81)
Moderate/Severe Chest Pain, Children, 1 Hr Exposures, Moderate Exertion			
Median ^a	120,000	240,000	210,000
(90% CI) ^b	(7,900 to 870,000)	(14,000 to 1,900,000)	(14,000 to 1,500,000)
Change ^c	-	120,000	95,000
(90% CI) ^b	-	(5,800 to 1,000,000)	(6,400 to 650,000)
% Change ^c	-	-104	-82
(90% CI) ^b	-	(-120 to -73)	(-74 to -80)
Moderate Lung Function Decrement ($\geq 15\%$ FEV1 decrement), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	580,000	1,400,000	1,100,000
(90% CI) ^b	(230,000 to 1,200,000)	(530,000 to 2,800,000)	(420,000 to 2,200,000)
Change ^c	-	770,000	470,000
(90% CI) ^b	-	(300,000 to 1,600,000)	(200,000 to 960,000)
% Change ^c	-	-133	-82
(90% CI) ^b	-	(-133 to -134)	(-79 to -87)
Large Lung Function Decrement ($\geq 20\%$ FEV1 decrement), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	110,000	260,000	220,000
(90% CI) ^b	(40,000 to 370,000)	(93,000 to 870,000)	(79,000 to 690,000)
Change ^c	-	150,000	110,000
(90% CI) ^b	-	(54,000 to 500,000)	(39,000 to 320,000)
% Change ^c	-	-134	-96
(90% CI) ^b	-	(-134 to -134)	(-86 to -99)

^aThe average of ten median estimates.^b90% CI denotes the 90% credible interval.^cChange relative to the proportional results.

TABLE 12 Annual Excess Hospital Admissions of Asthmatics Based on the Queens County Monitor Data with a Background Ozone Level of 0.04 ppm (1-h daily maximum ozone levels)

Frac- tile	Air Quality Scenario ^a											
	8394P	8394W	8394Q	8784P	8784W	8784Q	8584P	8584W	8584Q	8384P	8384W	8384Q
0.01	10	12	11	11	14	13	9	12	11	7	9	8
0.05	51	64	57	59	73	65	49	62	55	37	47	43
0.10	73	91	81	84	104	93	70	88	79	53	67	61
0.15	88	110	98	101	126	112	84	106	95	63	81	74
0.20	100	125	111	115	143	127	95	120	108	72	91	83
0.25	110	137	122	127	157	140	105	132	119	79	101	92
0.30	119	149	132	137	170	152	114	143	129	86	109	100
0.35	128	159	141	147	182	162	122	153	138	92	117	107
0.40	136	169	150	156	193	173	129	163	146	98	124	113
0.45	144	179	159	165	204	183	137	172	155	103	131	120
0.50	151	188	167	174	215	192	144	181	163	109	138	126
0.55	159	198	176	182	226	202	151	191	171	114	145	132
0.60	167	207	184	191	237	212	159	200	179	120	152	139
0.65	175	217	193	200	249	222	166	209	188	126	160	146
0.70	183	228	202	210	261	233	174	220	197	132	167	153
0.75	192	239	213	221	274	244	183	231	207	138	176	160
0.80	202	252	224	232	288	257	193	243	218	145	185	169
0.85	214	267	237	246	305	272	204	257	231	154	196	179
0.90	229	285	253	263	326	291	218	275	247	165	209	191
0.95	251	313	278	288	358	319	239	301	270	181	230	209
0.99	293	364	324	336	417	372	278	351	315	210	267	244
Mean	151	188	167	174	215	192	144	181	163	109	138	126
s.d. ^b	61	76	67	70	87	77	58	73	66	44	56	51

^a Key to scenario codes: character 1 specifies averaging time (8 hrs); character 2 specifies n (3, 5, or 7) of the nth highest 8-h average daily maximum ozone level; characters 3 and 4 specify the allowed ozone level (0.084 or 0.094 ppm); and character 5 specifies the AQAP (P for proportional, Q for quadratic, or W for Weibull). For example, 8394P means 8-h averaging time, 3rd highest 8-h average daily maximum ozone level, 0.094 ppm, and a proportional AQAP.

^b Standard deviation

TABLE 12 Annual Excess Hospital Admissions of Asthmatics Based on the Queens County Monitor Data with a Background Ozone Level of 0.04 ppm (1-h daily maximum ozone levels) (Cont'd)

Frac- tile	Air Quality Scenario ^a		
	1124P	1124W	1124Q
0.01	9	15	12
0.05	47	80	63
0.10	67	114	90
0.15	81	137	108
0.20	92	155	122
0.25	101	171	135
0.30	109	185	146
0.35	117	198	156
0.40	125	211	166
0.45	132	223	176
0.50	139	235	185
0.55	146	246	194
0.60	153	258	204
0.65	160	271	214
0.70	168	284	224
0.75	176	298	235
0.80	186	314	247
0.85	196	332	262
0.90	210	355	280
0.95	230	390	307
0.99	268	454	358
Mean	139	235	185
s.d. ^b	56	95	75

^a Key to scenario codes: character 1 specifies averaging time (1 hr); character 2 specifies the number of expected exceedances (1); characters 3 and 4 specify the allowed ozone level (0.124 ppm); and character 5 specifies the AQAP (P for proportional, Q for quadratic, or W for Weibull).

^b Standard deviation

TABLE 13 Annual Excess Hospital Admissions of Asthmatics Based on the Queens County Monitor Data with a Background Ozone Level of 0 ppm (1-h daily maximum ozone levels)

Frac- tile	Air Quality Scenario ^a											
	8394P	8394W	8394Q	8784P	8784W	8784Q	8584P	8584W	8584Q	8384P	8384W	8384Q
0.01	47	56	51	50	58	53	46	55	51	42	52	48
0.05	244	288	265	258	298	275	240	285	263	218	268	248
0.10	349	412	379	368	426	393	343	407	376	312	383	354
0.15	420	495	456	443	513	472	412	490	452	375	460	426
0.20	476	562	517	502	582	536	468	555	513	426	522	483
0.25	525	619	569	553	640	590	515	612	565	469	575	532
0.30	568	670	616	599	693	639	558	662	612	508	623	576
0.35	608	717	660	642	743	684	597	709	655	544	667	617
0.40	646	762	701	682	789	727	635	754	696	578	709	656
0.45	683	806	741	721	834	769	671	797	736	611	749	693
0.50	720	848	781	759	879	809	707	839	775	643	789	730
0.55	756	891	820	797	923	850	742	881	814	676	829	767
0.60	793	935	860	836	968	892	779	924	854	709	869	804
0.65	831	980	901	877	1,015	935	816	969	895	743	911	843
0.70	871	1,027	945	919	1,064	980	855	1,016	938	779	955	884
0.75	915	1,078	992	965	1,117	1,029	898	1,066	985	817	1,003	928
0.80	963	1,135	1,044	1,016	1,176	1,083	945	1,123	1,037	861	1,056	977
0.85	1,019	1,202	1,106	1,075	1,244	1,146	1,001	1,188	1,098	911	1,117	1,034
0.90	1,090	1,285	1,182	1,150	1,331	1,226	1,070	1,271	1,174	974	1,195	1,106
0.95	1,195	1,409	1,296	1,261	1,459	1,344	1,173	1,393	1,287	1,068	1,310	1,212
0.99	1,392	1,641	1,510	1,468	1,700	1,566	1,367	1,623	1,500	1,244	1,526	1,412
Mean	720	848	781	759	879	809	707	839	775	643	789	730
s.d. ^b	290	342	315	306	354	326	285	338	312	259	318	294

^a Key to scenario codes: character 1 specifies averaging time (8 hrs); character 2 specifies n (3, 5, or 7) of the nth highest 8-h average daily maximum ozone level; characters 3 and 4 specify the allowed ozone level (0.084 or 0.094 ppm); and character 5 specifies the AQAP (P for proportional, Q for quadratic, or W for Weibull). For example, 8394P means 8-h averaging time, 3rd highest 8-h average daily maximum ozone level, 0.094 ppm, and a proportional AQAP.

^b Standard deviation

TABLE 13 Annual Excess Hospital Admissions of Asthmatics Based on the Queens County Monitor Data with a Background Ozone Level of 0 ppm (1-h daily maximum ozone levels) (Cont'd)

Frac- tile	Air Quality Scenario ^a		
	1124P	1124W	1124Q
0.01	46	60	52
0.05	236	310	272
0.10	338	443	388
0.15	407	533	467
0.20	461	604	530
0.25	508	666	584
0.30	550	721	632
0.35	589	772	677
0.40	626	820	719
0.45	662	867	760
0.50	697	913	800
0.55	732	959	841
0.60	768	1,006	882
0.65	805	1,054	924
0.70	843	1,105	969
0.75	885	1,160	1,017
0.80	932	1,222	1,071
0.85	987	1,293	1,134
0.90	1,055	1,383	1,213
0.95	1,157	1,516	1,329
0.99	1,348	1,766	1,549
Mean	697	913	800
s.d. ^b	281	368	323

^a Key to scenario codes: character 1 specifies averaging time (1 hr); character 2 specifies the number of expected exceedances (1); characters 3 and 4 specify the allowed ozone level (0.124 ppm); and character 5 specifies the AQAP (P for proportional, Q for quadratic, or W for Weibull).

^b Standard deviation

TABLE 14 Admissions of New York City Asthmatics — Comparing Results for Three AQAPs for an 8 hr, Third Highest Average Daily Maximum of 0.094 ppm Standard

Case No./Issue	Air Quality Adjustment Procedure		
	Proportional	Weibull	Quadratic
1. Excess admissions ^a (background = 0.04 ppm)	151 ^b (51 to 251) ^c	188 (64 to 313)	167 (57 to 278)
Percent change from proportional results ^d	-	25	11
2. Excess admissions ^a (background = 0 ppm)	720 (244 to 1,195)	848 (244 to 1,195)	781 (244 to 1,195)
Percent change from proportional results ^d	-	18	8
3. All admissions ^e (thousands)	14.8 (13.9 to 15.6)	14.8 (13.9 to 15.7)	14.8 (13.9 to 15.6)
Percent change from proportional results ^d	-	0.25	0.11

^a Admissions of asthmatics because of exposure to ozone.

^b Median estimate.

^c 90% credible interval (about the median).

^d Because of the necessary assumption that results across scenarios are highly correlated (i.e., if admissions are high for one scenario, they are high for all scenarios), very little variation occurs in the percentage reduction from the current standard. Increases are positive and decreases are negative numbers.

^e Admissions of asthmatics for any respiratory-related reason; for scenario *i*, based on estimates of all admissions and excess admissions attributable to ozone levels >0.04 ppm for the As-Is scenario, and estimates of excess admissions attributable to ozone levels >0.04 ppm for scenario *i* (e.g., for the proportional AQAP: $14,800 \approx 15,000 - 388 + 151$). Fifteen thousand is the number of admissions of New York City asthmatics for any respiratory-related reason during the 1988-1990 ozone seasons (Thurston 1995); 388 is the median number of excess admissions associated with the As-Is scenario (Whitfield et al. 1996); and 151 is the median number of excess admissions for the proportional results with a background ozone level of 0.04 ppm. The corresponding 0.05- and 0.95-fractile estimates for excess admissions associated with the As-Is scenario, which are needed to calculate the 0.05- and 0.95-fractile estimates for the third case (all admissions), are 132 and 644, respectively (Whitfield et al. 1996).

TABLE 15 Admissions of New York City Asthmatics — Comparing Results for Three AQAPs for an 8 hr, Seventh Highest Average Daily Maximum of 0.084 ppm Standard

Case No./Issue	Air Quality Adjustment Procedure		
	Proportional	Weibull	Quadratic
1. Excess admissions ^a (background = 0.04 ppm)	174 ^b (59 to 288) ^c	215 (73 to 358)	192 (65 to 319)
Percent change from proportional results ^d	-	24	10
2. Excess admissions ^a (background = 0 ppm)	759 (258 to 1,261)	879 (258 to 1,261)	809 (258 to 1,261)
Percent change from proportional results ^d	-	16	7
3. All admissions ^e (thousands)	14.8 (13.9 to 15.6)	14.8 (13.9 to 15.7)	14.8 (13.9 to 15.7)
Percent change from proportional results ^d	-	0.28	0.12

^a Admissions of asthmatics because of exposure to ozone.

^b Median estimate.

^c 90% credible interval (about the median).

^d Because of the necessary assumption that results across scenarios are highly correlated (i.e., if admissions are high for one scenario, they are high for all scenarios), very little variation occurs in the percentage reduction from the current standard. Increases are positive and decreases are negative numbers.

^e Admissions of asthmatics for any respiratory-related reason; for scenario *i*, based on estimates of all admissions and excess admissions attributable to ozone levels >0.04 ppm for the As-Is scenario, and estimates of excess admissions attributable to ozone levels >0.04 ppm for scenario *i* (e.g., for the proportional AQAP: 14,800 $\approx$ 15,000 - 388 + 174). Fifteen thousand is the number of admissions of New York City asthmatics for any respiratory-related reason during the 1988-1990 ozone seasons (Thurston 1995); 388 is the median number of excess admissions associated with the As-Is scenario (Whitfield et al. 1996); and 174 is the median number of excess admissions for the proportional results with a background ozone level of 0.04 ppm. The corresponding 0.05- and 0.95-fractile estimates for excess admissions associated with the As-Is scenario, which are needed to calculate the 0.05- and 0.95-fractile estimates for the third case (all admissions), are 132 and 644, respectively (Whitfield et al. 1996).

TABLE 16 Admissions of New York City Asthmatics — Comparing Results for Three AQAPs for an 8 hr, Fifth Highest Average Daily Maximum of 0.084 ppm Standard

Case No./Issue	Air Quality Adjustment Procedure		
	Proportional	Weibull	Quadratic
1. Excess admissions ^a (background = 0.04 ppm)	144 ^a (49 to 239) ^c	181 (62 to 301)	163 (55 to 270)
Percent change from proportional results ^d	-	26	13
2. Excess admissions ^a (background = 0 ppm)	707 (240 to 1,173)	839 (240 to 1,173)	775 (240 to 1,173)
Percent change from proportional results ^d	-	19	10
3. All admissions ^e (thousands)	14.8 (13.9 to 15.6)	14.8 (13.9 to 15.7)	14.8 (13.9 to 15.6)
Percent change from proportional results ^d	-	0.25	0.13

^a Admissions of asthmatics because of exposure to ozone.

^b Median estimate.

^c 90% credible interval (about the median).

^d Because of the necessary assumption that results across scenarios are highly correlated (i.e., if admissions are high for one scenario, they are high for all scenarios), very little variation occurs in the percentage reduction from the current standard. Increases are positive and decreases are negative numbers.

^e Admissions of asthmatics for any respiratory-related reason; for scenario *i*, based on estimates of all admissions and excess admissions attributable to ozone levels >0.04 ppm for the As-Is scenario, and estimates of excess admissions attributable to ozone levels >0.04 ppm for scenario *i* (e.g., for the proportional AQAP: 14,800 $\approx$ 15,000 - 388 + 144). Fifteen thousand is the number of admissions of New York City asthmatics for any respiratory-related reason during the 1988-1990 ozone seasons (Thurston 1995); 388 is the median number of excess admissions associated with the As-Is scenario (Whitfield et al. 1996); and 144 is the median number of excess admissions for the proportional results with a background ozone level of 0.04 ppm. The corresponding 0.05- and 0.95-fractile estimates for excess admissions associated with the As-Is scenario, which are needed to calculate the 0.05- and 0.95-fractile estimates for the third case (all admissions), are 132 and 644, respectively (Whitfield et al. 1996).

TABLE 17 Admissions of New York City Asthmatics — Comparing Results for Three AQAPs for an 8 hr, Third Highest Average Daily Maximum of 0.084 ppm Standard

Case No./Issue	Air Quality Adjustment Procedure		
	Proportional	Weibull	Quadratic
1. Excess admissions ^a (background = 0.04 ppm)	109 ^b (37 to 181) ^c	138 (47 to 230)	126 (43 to 209)
Percent change from proportional results ^d	-	27	16
2. Excess admissions ^a (background = 0 ppm)	643 (218 to 1,068)	789 (218 to 1,068)	730 (218 to 1,068)
Percent change from proportional results ^d	-	23	14
3. All admissions ^e (thousands)	14.7 (13.9 to 15.5)	14.8 (13.9 to 15.6)	14.7 (13.9 to 15.6)
Percent change from proportional results ^d	-	0.20	0.12

^a Admissions of asthmatics because of exposure to ozone.

^b Median estimate.

^c 90% credible interval (about the median).

^d Because of the necessary assumption that results across scenarios are highly correlated (i.e., if admissions are high for one scenario, they are high for all scenarios), very little variation occurs in the percentage reduction from the current standard. Increases are positive and decreases are negative numbers.

^e Admissions of asthmatics for any respiratory-related reason; for scenario *i*, based on estimates of all admissions and excess admissions attributable to ozone levels >0.04 ppm for the As-Is scenario, and estimates of excess admissions attributable to ozone levels >0.04 ppm for scenario *i* (e.g., for the proportional AQAP: $14,700 \approx 15,000 - 388 + 109$). Fifteen thousand is the number of admissions of New York City asthmatics for any respiratory-related reason during the 1988-1990 ozone seasons (Thurston 1995); 388 is the median number of excess admissions associated with the As-Is scenario (Whitfield et al. 1996); and 109 is the median number of excess admissions for the proportional results with a background ozone level of 0.04 ppm. The corresponding 0.05- and 0.95-fractile estimates for excess admissions associated with the As-Is scenario, which are needed to calculate the 0.05- and 0.95-fractile estimates for the third case (all admissions), are 132 and 644, respectively (Whitfield et al. 1996).

TABLE 18 Admissions of New York City Asthmatics — Comparing Results for Three AQAPs for a One Hr, One Expected Exceedance, 0.124 ppm Standard

Case No./Issue	Air Quality Adjustment Procedure		
	Proportional	Weibull	Quadratic
1. Excess admissions ^a (background = 0.04 ppm)	139 ^b (47 to 230) ^c	235 (80 to 390)	185 (63 to 307)
Percent change from proportional results ^d	-	69	33
2. Excess admissions ^a (background = 0 ppm)	697 (236 to 1,157)	913 (236 to 1,157)	800 (236 to 1,157)
Percent change from proportional results ^d	-	31	15
3. All admissions ^e (thousands)	14.8 (13.9 to 15.6)	14.8 (13.9 to 15.7)	14.8 (13.9 to 15.7)
Percent change from proportional results ^d	-	0.65	0.31

^a Admissions of asthmatics because of exposure to ozone.

^b Median estimate.

^c 90% credible interval (about the median).

^d Because of the necessary assumption that results across scenarios are highly correlated (i.e., if admissions are high for one scenario, they are high for all scenarios), very little variation occurs in the percentage reduction from the current standard. Increases are positive and decreases are negative numbers.

^e Admissions of asthmatics for any respiratory-related reason; for scenario *i*, based on estimates of all admissions and excess admissions attributable to ozone levels >0.04 ppm for the As-Is scenario, and estimates of excess admissions attributable to ozone levels >0.04 ppm for scenario *i* (e.g., for the proportional AQAP: $14,800 \approx 15,000 - 388 + 139$). Fifteen thousand is the number of admissions of New York City asthmatics for any respiratory-related reason during the 1988-1990 ozone seasons (Thurston 1995); 388 is the median number of excess admissions associated with the As-Is scenario (Whitfield et al. 1996); and 139 is the median number of excess admissions for the proportional results with a background ozone level of 0.04 ppm. The corresponding 0.05- and 0.95-fractile estimates for excess admissions associated with the As-Is scenario, which are needed to calculate the 0.05- and 0.95-fractile estimates for the third case (all admissions), are 132 and 644, respectively (Whitfield et al. 1996).

Appendix

TABLE A1 Houston Children, Scenario 8HA3H-0.094

	Proportional	Weibull	Quadratic
Moderate/Severe Cough, Children, 1 Hr Exposures, Heavy Exertion			
Median ^a	2,985	4,043	3,565
(90% CI) ^b	(1,115 to 4,543)	(1,472 to 6,196)	(1,302 to 5,458)
Change ^c	-	1,059	581
(90% CI) ^b	-	(357 to 1,654)	(188 to 916)
% Change ^c	-	35	19
(90% CI) ^b	-	(32 , 36)	(17 , 20)
Moderate/Severe Chest Pain, Children, 1 Hr Exposures, Moderate Exertion			
Median ^a	4,317	3,305	3,159
(90% CI) ^b	(1,131 to 11,312)	(625 to 9,942)	(550 to 9,688)
Change ^c	-	-1,011	-1,157
(90% CI) ^b	-	(-506 to -1,369)	(-581 to -1,623)
% Change ^c	-	-23	-27
(90% CI) ^b	-	(-45 , -12)	(-51 , -14)
Moderate Lung Function Decrement ($\geq 15\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	18,959	19,826	18,765
(90% CI) ^b	(10,124 to 31,729)	(10,427 to 33,505)	(9,825 to 31,861)
Change ^c	-	867	-194
(90% CI) ^b	-	(304 to 1,776)	(-299 to 132)
% Change ^c	-	5	-1
(90% CI) ^b	-	(3 , 6)	(-3 , 0)
Large Lung Function Decrement ($\geq 20\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	7,501	7,672	7,188
(90% CI) ^b	(3,102 to 15,641)	(3,026 to 16,428)	(2,838 to 15,462)
Change ^c	-	172	-312
(90% CI) ^b	-	(-76 to 787)	(-264 to -179)
% Change ^c	-	2	-4
(90% CI) ^b	-	(-2 , 5)	(-9 , -1)

^aThe average of ten median estimates.^b90% CI denotes the 90% credible interval.^cChange relative to the first standard.

TABLE A2 Los Angeles Children, Scenario 8HA3H-0.094

	Proportional	Weibull	Quadratic
Moderate/Severe Cough, Children, 1 Hr Exposures, Heavy Exertion			
Median ^a	10,791	13,087	13,649
(90% CI) ^b	(4,066 to 16,365)	(4,812 to 19,992)	(5,097 to 20,740)
Change ^c	-	2,296	2,859
(90% CI) ^b	-	(746 to 3,627)	(1,032 to 4,375)
% Change ^c	-	21	26
(90% CI) ^b	-	(18 , 22)	(25 , 27)
Moderate/Severe Chest Pain, Children, 1 Hr Exposures, Moderate Exertion			
Median ^a	10,255	8,036	7,130
(90% CI) ^b	(2,140 to 31,635)	(1,459 to 27,271)	(1,011 to 26,067)
Change ^c	-	-2,219	-3,125
(90% CI) ^b	-	(-680 to -4,363)	(-1,128 to -5,568)
% Change ^c	-	-22	-30
(90% CI) ^b	-	(-32 , -14)	(-53 , -18)
Moderate Lung Function Decrement ($\geq 15\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	46,257	51,769	53,573
(90% CI) ^b	(22,971 to 82,511)	(25,360 to 93,452)	(26,802 to 95,091)
Change ^c	-	5,513	7,317
(90% CI) ^b	-	(2,390 to 10,942)	(3,832 to 12,581)
% Change ^c	-	12	16
(90% CI) ^b	-	(10 , 13)	(17 , 15)
Large Lung Function Decrement ($\geq 20\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	15,793	17,129	18,513
(90% CI) ^b	(6,316 to 35,967)	(6,873 to 39,639)	(7,491 to 41,718)
Change ^c	-	1,336	2,720
(90% CI) ^b	-	(557 to 3,672)	(1,176 to 5,751)
% Change ^c	-	8	17
(90% CI) ^b	-	(9 , 10)	(19 , 16)

^aThe average of ten median estimates.^b90% CI denotes the 90% credible interval.^cChange relative to the first standard.

TABLE A3 New York Children, Scenario 8HA3H-0.094

	Proportional	Weibull	Quadratic
Moderate/Severe Cough, Children, 1 Hr Exposures, Heavy Exertion			
Median ^a	6,455	8,880	7,594
(90% CI) ^b	(2,325 to 9,924)	(3,132 to 13,737)	(2,714 to 11,698)
Change ^c	-	2,426	1,139
(90% CI) ^b	-	(808 to 3,814)	(390 to 1,775)
% Change ^c	-	38	18
(90% CI) ^b	-	(35 , 38)	(17 , 18)
Moderate/Severe Chest Pain, Children, 1 Hr Exposures, Moderate Exertion			
Median ^a	7,650	6,359	6,585
(90% CI) ^b	(1,112 to 27,199)	(743 to 24,930)	(755 to 25,449)
Change ^c	-	-1,290	-1,064
(90% CI) ^b	-	(-368 to -2,269)	(-356 to -1,749)
% Change ^c	-	-17	-14
(90% CI) ^b	-	(-33 , -8)	(-32 , -6)
Moderate Lung Function Decrement ($\geq 15\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	51,465	55,730	52,747
(90% CI) ^b	(26,175 to 89,864)	(28,040 to 98,117)	(26,642 to 92,568)
Change ^c	-	4,265	1,282
(90% CI) ^b	-	(1,865 to 8,254)	(467 to 2,705)
% Change ^c	-	8	2
(90% CI) ^b	-	(7 , 9)	(2 , 3)
Large Lung Function Decrement ($\geq 20\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	18,406	19,536	18,629
(90% CI) ^b	(7,252 to 40,995)	(7,601 to 44,149)	(7,258 to 41,908)
Change ^c	-	1,131	223
(90% CI) ^b	-	(350 to 3,155)	(7 to 913)
% Change ^c	-	6	1
(90% CI) ^b	-	(5 , 8)	(0 , 2)

^aThe average of ten median estimates.^b90% CI denotes the 90% credible interval.^cChange relative to the first standard.

TABLE A4 Philadelphia Children, Scenario 8HA3H-0.094

	Proportional	Weibull	Quadratic
Moderate/Severe Cough, Children, 1 Hr Exposures, Heavy Exertion			
Median ^a	4,245	5,698	4,966
(90% CI) ^b	(1,544 to 6,504)	(2,075 to 8,722)	(1,808 to 7,605)
Change ^c	-	1,453	722
(90% CI) ^b	-	(531 to 2,218)	(264 to 1,101)
% Change ^c	-	34	17
(90% CI) ^b	-	(34 , 34)	(17 , 17)
Moderate/Severe Chest Pain, Children, 1 Hr Exposures, Moderate Exertion			
Median ^a	3,822	3,508	3,475
(90% CI) ^b	(557 to 12,466)	(410 to 12,133)	(411 to 12,002)
Change ^c	-	-313	-346
(90% CI) ^b	-	(-146 to -332)	(-145 to -464)
% Change ^c	-	-8	-9
(90% CI) ^b	-	(-26 , -3)	(-26 , -4)
Moderate Lung Function Decrement ($\geq 15\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	28,864	31,638	30,086
(90% CI) ^b	(15,720 to 47,273)	(17,337 to 51,495)	(16,438 to 49,106)
Change ^c	-	2,775	1,222
(90% CI) ^b	-	(1,618 to 4,222)	(718 to 1,834)
% Change ^c	-	10	4
(90% CI) ^b	-	(10 , 9)	(5 , 4)
Large Lung Function Decrement ($\geq 20\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	11,826	13,080	12,376
(90% CI) ^b	(4,692 to 24,494)	(5,160 to 26,993)	(4,878 to 25,617)
Change ^c	-	1,255	551
(90% CI) ^b	-	(469 to 2,499)	(187 to 1,123)
% Change ^c	-	11	5
(90% CI) ^b	-	(10 , 10)	(4 , 5)

^aThe average of ten median estimates.^b90% CI denotes the 90% credible interval.^cChange relative to the first standard.

TABLE A5 St Louis Children, Scenario 8HA3H-0.094

	Proportional	Weibull	Quadratic
Moderate/Severe Cough, Children, 1 Hr Exposures, Heavy Exertion			
Median ^a	2,056	2,676	2,133
(90% CI) ^b	(749 to 3,149)	(976 to 4,095)	(778 to 3,266)
Change ^c	-	620	77
(90% CI) ^b	-	(228 to 946)	(29 to 117)
% Change ^c	-	30	4
(90% CI) ^b	-	(30 , 30)	(4 , 4)
Moderate/Severe Chest Pain, Children, 1 Hr Exposures, Moderate Exertion			
Median ^a	1,614	1,489	1,584
(90% CI) ^b	(235 to 5,431)	(185 to 5,279)	(223 to 5,388)
Change ^c	-	-125	-30
(90% CI) ^b	-	(-50 to -151)	(-12 to -42)
% Change ^c	-	-8	-2
(90% CI) ^b	-	(-21 , -3)	(-5 , -1)
Moderate Lung Function Decrement ($\geq 15\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	11,435	12,572	11,593
(90% CI) ^b	(5,983 to 19,442)	(6,634 to 21,220)	(6,074 to 19,687)
Change ^c	-	1,137	158
(90% CI) ^b	-	(652 to 1,778)	(92 to 245)
% Change ^c	-	10	1
(90% CI) ^b	-	(11 , 9)	(2 , 1)
Large Lung Function Decrement ($\geq 20\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	4,344	4,843	4,414
(90% CI) ^b	(1,700 to 9,394)	(1,903 to 10,379)	(1,729 to 9,530)
Change ^c	-	500	70
(90% CI) ^b	-	(204 to 985)	(30 to 137)
% Change ^c	-	11	2
(90% CI) ^b	-	(12 , 10)	(2 , 1)

^aThe average of ten median estimates.^b90% CI denotes the 90% credible interval.^cChange relative to the first standard.

TABLE A6 Washington, D.C. Children, Scenario 8HA3H-0.094

	Proportional	Weibull	Quadratic
Moderate/Severe Cough, Children, 1 Hr Exposures, Heavy Exertion			
Median ^a	3,469	4,357	3,698
(90% CI) ^b	(1,266 to 5,309)	(1,602 to 6,650)	(1,352 to 5,656)
Change ^c	-	889	230
(90% CI) ^b	-	(336 to 1,341)	(87 to 347)
% Change ^c	-	26	7
(90% CI) ^b	-	(27 , 25)	(7 , 7)
Moderate/Severe Chest Pain, Children, 1 Hr Exposures, Moderate Exertion			
Median ^a	2,910	2,668	2,750
(90% CI) ^b	(445 to 9,307)	(344 to 8,990)	(383 to 9,071)
Change ^c	-	-241	-160
(90% CI) ^b	-	(-101 to -317)	(-62 to -235)
% Change ^c	-	-8	-6
(90% CI) ^b	-	(-23 , -3)	(-14 , -3)
Moderate Lung Function Decrement ($\geq 15\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	21,346	23,130	21,769
(90% CI) ^b	(11,608 to 35,000)	(12,651 to 37,729)	(11,849 to 35,656)
Change ^c	-	1,784	424
(90% CI) ^b	-	(1,044 to 2,730)	(242 to 657)
% Change ^c	-	8	2
(90% CI) ^b	-	(9 , 8)	(2 , 2)
Large Lung Function Decrement ($\geq 20\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	8,742	9,544	8,924
(90% CI) ^b	(3,473 to 18,112)	(3,792 to 19,680)	(3,535 to 18,493)
Change ^c	-	803	183
(90% CI) ^b	-	(320 to 1,568)	(62 to 381)
% Change ^c	-	9	2
(90% CI) ^b	-	(9 , 9)	(2 , 2)

^aThe average of ten median estimates.^b90% CI denotes the 90% credible interval.^cChange relative to the first standard.

TABLE A7 Houston Child-Occurrences, Scenario 8HA3H-0.094

	Proportional	Weibull	Quadratic
Moderate/Severe Cough, Children, 1 Hr Exposures, Heavy Exertion			
Median ^a	4,647	8,745	6,507
(90% CI) ^b	(1,662 to 7,171)	(2,962 to 13,701)	(2,250 to 10,134)
Change ^c	-	4,098	1,860
(90% CI) ^b	-	(1,301 to 6,531)	(589 to 2,963)
% Change ^c	-	88	40
(90% CI) ^b	-	(78 , 91)	(35 , 41)
Moderate/Severe Chest Pain, Children, 1 Hr Exposures, Moderate Exertion			
Median ^a	14,180	18,195	15,814
(90% CI) ^b	(2,046 to 93,460)	(1,337 to 172,990)	(1,246 to 131,138)
Change ^c	-	4,015	1,634
(90% CI) ^b	-	(-708 to 79,530)	(-799 to 37,679)
% Change ^c	-	28	12
(90% CI) ^b	-	(-35 , 85)	(-39 , 40)
Moderate Lung Function Decrement ($\geq 15\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	48,376	91,466	68,549
(90% CI) ^b	(19,498 to 99,812)	(32,287 to 202,272)	(25,426 to 147,849)
Change ^c	-	43,091	20,173
(90% CI) ^b	-	(12,789 to 102,460)	(5,928 to 48,037)
% Change ^c	-	89	42
(90% CI) ^b	-	(66 , 103)	(30 , 48)
Large Lung Function Decrement ($\geq 20\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	10,086	12,562	11,199
(90% CI) ^b	(3,936 to 31,242)	(4,509 to 52,953)	(4,081 to 41,530)
Change ^c	-	2,476	1,113
(90% CI) ^b	-	(574 to 21,711)	(145 to 10,288)
% Change ^c	-	25	11
(90% CI) ^b	-	(15 , 69)	(4 , 33)

^aThe average of ten median estimates.^b90% CI denotes the 90% credible interval.^cChange relative to the first standard.

TABLE A8 Los Angeles Child-Occurrences, Scenario 8HA3H-0.094

	Proportional	Weibull	Quadratic
Moderate/Severe Cough, Children, 1 Hr Exposures, Heavy Exertion			
Median ^a	18,211	26,980	28,850
(90% CI) ^b	(6,587 to 27,977)	(9,396 to 41,919)	(10,254 to 44,532)
Change ^c	-	8,769	10,639
(90% CI) ^b	-	(2,809 to 13,942)	(3,668 to 16,556)
% Change ^c	-	48	58
(90% CI) ^b	-	(43 , 50)	(56 , 59)
Moderate/Severe Chest Pain, Children, 1 Hr Exposures, Moderate Exertion			
Median ^a	60,531	68,324	83,925
(90% CI) ^b	(6,197 to 382,811)	(5,293 to 544,041)	(5,689 to 600,697)
Change ^c	-	7,793	23,394
(90% CI) ^b	-	(-903 to 161,230)	(-507 to 217,887)
% Change ^c	-	13	39
(90% CI) ^b	-	(-15 , 42)	(-8 , 57)
Moderate Lung Function Decrement ($\geq 15\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	209,829	314,386	369,231
(90% CI) ^b	(84,280 to 432,504)	(119,771 to 668,016)	(147,818 to 762,656)
Change ^c	-	104,558	159,403
(90% CI) ^b	-	(35,491 to 235,512)	(63,538 to 330,152)
% Change ^c	-	50	76
(90% CI) ^b	-	(42 , 54)	(75 , 76)
Large Lung Function Decrement ($\geq 20\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	43,728	55,958	76,108
(90% CI) ^b	(15,790 to 137,580)	(20,004 to 196,019)	(27,454 to 241,147)
Change ^c	-	12,230	32,380
(90% CI) ^b	-	(4,215 to 58,440)	(11,665 to 103,568)
% Change ^c	-	28	74
(90% CI) ^b	-	(27 , 42)	(74 , 75)

^aThe average of ten median estimates.^b90% CI denotes the 90% credible interval.^cChange relative to the first standard.

TABLE A9 New York Child-Occurrences, Scenario 8HA3H-0.094

	Proportional	Weibull	Quadratic
Moderate/Severe Cough, Children, 1 Hr Exposures, Heavy Exertion			
Median ^a	8,847	14,494	11,382
(90% CI) ^b	(3,100 to 13,718)	(4,936 to 22,662)	(3,944 to 17,703)
Change ^c	-	5,647	2,535
(90% CI) ^b	-	(1,836 to 8,945)	(844 to 3,986)
% Change ^c	-	64	29
(90% CI) ^b	-	(59 , 65)	(27 , 29)
Moderate/Severe Chest Pain, Children, 1 Hr Exposures, Moderate Exertion			
Median ^a	33,181	41,166	37,124
(90% CI) ^b	(2,486 to 241,309)	(2,133 to 368,766)	(2,095 to 297,798)
Change ^c	-	7,985	3,943
(90% CI) ^b	-	(-353 to 127,457)	(-390 to 56,490)
% Change ^c	-	24	12
(90% CI) ^b	-	(-14 , 53)	(-16 , 23)
Moderate Lung Function Decrement ($\geq 15\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	178,127	275,036	222,322
(90% CI) ^b	(71,999 to 365,789)	(104,409 to 585,069)	(87,299 to 464,081)
Change ^c	-	96,910	44,196
(90% CI) ^b	-	(32,411 to 219,280)	(15,301 to 98,293)
% Change ^c	-	54	25
(90% CI) ^b	-	(45 , 60)	(21 , 27)
Large Lung Function Decrement ($\geq 20\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	37,710	48,593	43,479
(90% CI) ^b	(13,597 to 117,412)	(16,997 to 171,733)	(15,362 to 143,193)
Change ^c	-	10,884	5,769
(90% CI) ^b	-	(3,400 to 54,322)	(1,766 to 25,782)
% Change ^c	-	29	15
(90% CI) ^b	-	(25 , 46)	(13 , 22)

^aThe average of ten median estimates.^b90% CI denotes the 90% credible interval.^cChange relative to the first standard.

TABLE A10 Philadelphia Child-Occurrences, Scenario 8HA3H-0.094

	Proportional	Weibull	Quadratic
Moderate/Severe Cough, Children, 1 Hr Exposures, Heavy Exertion			
Median ^a	6,771	10,803	8,667
(90% CI) ^b	(2,372 to 10,497)	(3,760 to 16,774)	(3,032 to 13,436)
Change ^c	-	4,032	1,896
(90% CI) ^b	-	(1,388 to 6,278)	(661 to 2,940)
% Change ^c	-	60	28
(90% CI) ^b	-	(59 , 60)	(28 , 28)
Moderate/Severe Chest Pain, Children, 1 Hr Exposures, Moderate Exertion			
Median ^a	20,576	30,624	25,506
(90% CI) ^b	(1,302 to 161,727)	(1,335 to 259,694)	(1,240 to 207,776)
Change ^c	-	10,048	4,931
(90% CI) ^b	-	(34 to 97,968)	(-62 to 46,050)
% Change ^c	-	49	24
(90% CI) ^b	-	(3 , 61)	(-5 , 28)
Moderate Lung Function Decrement ($\geq 15\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	122,334	201,597	159,788
(90% CI) ^b	(47,604 to 256,885)	(75,728 to 431,110)	(61,231 to 338,147)
Change ^c	-	79,263	37,454
(90% CI) ^b	-	(28,124 to 174,225)	(13,627 to 81,263)
% Change ^c	-	65	31
(90% CI) ^b	-	(59 , 68)	(29 , 32)
Large Lung Function Decrement ($\geq 20\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	23,229	34,555	29,072
(90% CI) ^b	(8,346 to 77,798)	(11,916 to 125,025)	(10,185 to 100,684)
Change ^c	-	11,327	5,843
(90% CI) ^b	-	(3,570 to 47,228)	(1,840 to 22,886)
% Change ^c	-	49	25
(90% CI) ^b	-	(43 , 61)	(22 , 29)

^aThe average of ten median estimates.^b90% CI denotes the 90% credible interval.^cChange relative to the first standard.

TABLE A11 St Louis Child-Occurrences, Scenario 8HA3H-0.094

	Proportional	Weibull	Quadratic
Moderate/Severe Cough, Children, 1 Hr Exposures, Heavy Exertion			
Median ^a	3,454	5,272	3,644
(90% CI) ^b	(1,206 to 5,360)	(1,825 to 8,202)	(1,272 to 5,656)
Change ^c	-	1,818	190
(90% CI) ^b	-	(619 to 2,842)	(67 to 296)
% Change ^c	-	53	6
(90% CI) ^b	-	(51 , 53)	(5 , 6)
Moderate/Severe Chest Pain, Children, 1 Hr Exposures, Moderate Exertion			
Median ^a	10,346	14,297	10,811
(90% CI) ^b	(650 to 82,492)	(671 to 125,187)	(648 to 87,107)
Change ^c	-	3,952	466
(90% CI) ^b	-	(21 to 42,695)	(-2 to 4,616)
% Change ^c	-	38	4
(90% CI) ^b	-	(3 , 52)	(0 , 6)
Moderate Lung Function Decrement ($\geq 15\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	55,588	89,580	59,364
(90% CI) ^b	(21,381 to 117,335)	(33,435 to 192,183)	(22,783 to 125,471)
Change ^c	-	33,992	3,777
(90% CI) ^b	-	(12,055 to 74,848)	(1,402 to 8,136)
% Change ^c	-	61	7
(90% CI) ^b	-	(56 , 64)	(7 , 7)
Large Lung Function Decrement ($\geq 20\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	10,268	15,063	10,884
(90% CI) ^b	(3,573 to 35,252)	(5,159 to 55,292)	(3,788 to 37,552)
Change ^c	-	4,795	617
(90% CI) ^b	-	(1,587 to 20,040)	(216 to 2,300)
% Change ^c	-	47	6
(90% CI) ^b	-	(44 , 57)	(6 , 7)

^aThe average of ten median estimates.^b90% CI denotes the 90% credible interval.^cChange relative to the first standard.

TABLE A12 Washington, D.C. Child-Occurrences, Scenario 8HA3H-0.094

	Proportional	Weibull	Quadratic
Moderate/Severe Cough, Children, 1 Hr Exposures, Heavy Exertion			
Median ^a	5,964	8,789	6,663
(90% CI) ^b	(2,095 to 9,237)	(3,090 to 13,606)	(2,341 to 10,319)
Change ^c	-	2,826	700
(90% CI) ^b	-	(996 to 4,369)	(246 to 1,083)
% Change ^c	-	47	12
(90% CI) ^b	-	(48 , 47)	(12 , 12)
Moderate/Severe Chest Pain, Children, 1 Hr Exposures, Moderate Exertion			
Median ^a	19,728	27,729	21,784
(90% CI) ^b	(1,212 to 149,069)	(1,306 to 218,072)	(1,191 to 166,544)
Change ^c	-	8,001	2,057
(90% CI) ^b	-	(94 to 69,003)	(-21 to 17,475)
% Change ^c	-	41	10
(90% CI) ^b	-	(8 , 46)	(-2 , 12)
Moderate Lung Function Decrement ($\geq 15\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	106,510	162,099	121,194
(90% CI) ^b	(41,495 to 223,279)	(62,899 to 340,240)	(47,199 to 253,979)
Change ^c	-	55,590	14,685
(90% CI) ^b	-	(21,404 to 116,961)	(5,705 to 30,701)
% Change ^c	-	52	14
(90% CI) ^b	-	(52 , 52)	(14 , 14)
Large Lung Function Decrement ($\geq 20\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	20,428	30,859	23,274
(90% CI) ^b	(7,202 to 68,231)	(10,600 to 104,072)	(8,104 to 77,848)
Change ^c	-	10,432	2,847
(90% CI) ^b	-	(3,398 to 35,842)	(902 to 9,618)
% Change ^c	-	51	14
(90% CI) ^b	-	(47 , 53)	(13 , 14)

^aThe average of ten median estimates.^b90% CI denotes the 90% credible interval.^cChange relative to the first standard.

TABLE A13 Risk Results for Houston Children, Scenario 8HA7H-0.084

	Proportional	Weibull	Quadratic
Moderate/Severe Cough, Children, 1 Hr Exposures, Heavy Exertion			
Median ^a	3,200	3,800	3,500
(90% CI) ^b	(1,200 to 4,800)	(1,400 to 5,800)	(1,300 to 5,400)
Change ^c	-	610	320
(90% CI) ^b	-	(180 to 990)	(81 to 530)
% Change ^c	-	19	10
(90% CI) ^b	-	(15 , 20)	(7 , 11)
Moderate/Severe Chest Pain, Children, 1 Hr Exposures, Moderate Exertion			
Median ^a	4,800	3,200	3,000
(90% CI) ^b	(1,300 to 12,000)	(580 to 9,700)	(500 to 9,400)
Change ^c	-	-1,600	-1,800
(90% CI) ^b	-	(-740 to -2,400)	(-830 to -2,700)
% Change ^c	-	-34	-37
(90% CI) ^b	-	(-56 , -20)	(-63 , -22)
Moderate Lung Function Decrement ($\geq 15\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	21,000	19,000	18,000
(90% CI) ^b	(11,000 to 34,000)	(9,800 to 32,000)	(9,400 to 31,000)
Change ^c	-	-2,000	-2,700
(90% CI) ^b	-	(-1,600 to -2,200)	(-2,000 to -3,300)
% Change ^c	-	-10	-13
(90% CI) ^b	-	(-14 , -6)	(-17 , -10)
Large Lung Function Decrement ($\geq 20\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	8,500	7,100	6,800
(90% CI) ^b	(3,600 to 17,000)	(2,800 to 15,000)	(2,700 to 15,000)
Change ^c	-	-1,400	-1,700
(90% CI) ^b	-	(-800 to -1,900)	(-920 to -2,500)
% Change ^c	-	-17	-20
(90% CI) ^b	-	(-22 , -11)	(-26 , -15)

^aThe average of ten median estimates.^b90% CI denotes the 90% credible interval.^cChange relative to the proportional results.

TABLE A14 Risk Results for Los Angeles Children, Scenario 8HA7H-0.084

	Proportional	Weibull	Quadratic
Moderate/Severe Cough, Children, 1 Hr Exposures, Heavy Exertion			
Median ^a	9,800	11,000	11,000
(90% CI) ^b	(3,600 to 15,000)	(4,000 to 17,000)	(4,000 to 17,000)
Change ^c	-	1,200	1,400
(90% CI) ^b	-	(340 to 2,000)	(420 to 2,200)
% Change ^c	-	13	14
(90% CI) ^b	-	(9 , 14)	(12 , 15)
Moderate/Severe Chest Pain, Children, 1 Hr Exposures, Moderate Exertion			
Median ^a	8,900	6,000	5,000
(90% CI) ^b	(1,700 to 29,000)	(930 to 23,000)	(550 to 21,000)
Change ^c	-	-2,800	-3,900
(90% CI) ^b	-	(-800 to -5,900)	(-1,200 to -7,600)
% Change ^c	-	-32	-44
(90% CI) ^b	-	(-46 , -21)	(-68 , -26)
Moderate Lung Function Decrement ($\geq 15\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	40,000	41,000	41,000
(90% CI) ^b	(19,000 to 73,000)	(19,000 to 76,000)	(20,000 to 75,000)
Change ^c	-	910	760
(90% CI) ^b	-	(110 to 2,700)	(220 to 1,900)
% Change ^c	-	2	2
(90% CI) ^b	-	(1 , 4)	(1 , 3)
Large Lung Function Decrement ($\geq 20\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	13,000	13,000	13,000
(90% CI) ^b	(5,000 to 31,000)	(5,000 to 31,000)	(5,000 to 31,000)
Change ^c	-	-210	-31
(90% CI) ^b	-	(-85 to 160)	(-15 to 270)
% Change ^c	-	-2	0
(90% CI) ^b	-	(-2 , 1)	(0 , 1)

^aThe average of ten median estimates.^b90% CI denotes the 90% credible interval.^cChange relative to the proportional results.

TABLE A15 Risk Results for New York Children, Scenario 8HA7H-0.084

	Proportional	Weibull	Quadratic
Moderate/Severe Cough, Children, 1 Hr Exposures, Heavy Exertion			
Median ^a	7,200	9,100	8,100
(90% CI) ^b	(2,600 to 11,000)	(3,300 to 14,000)	(2,900 to 12,000)
Change ^c	-	1,900	880
(90% CI) ^b	-	(630 to 3,000)	(300 to 1,400)
% Change ^c	-	26	12
(90% CI) ^b	-	(24 , 27)	(11 , 12)
Moderate/Severe Chest Pain, Children, 1 Hr Exposures, Moderate Exertion			
Median ^a	9,200	7,000	7,600
(90% CI) ^b	(1,500 to 30,000)	(950 to 26,000)	(1,000 to 27,000)
Change ^c	-	-2,200	-1,600
(90% CI) ^b	-	(-580 to -4,300)	(-510 to -2,900)
% Change ^c	-	-23	-17
(90% CI) ^b	-	(-38 , -14)	(-33 , -10)
Moderate Lung Function Decrement ($\geq 15\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	59,000	58,000	58,000
(90% CI) ^b	(31,000 to 100,000)	(30,000 to 100,000)	(30,000 to 99,000)
Change ^c	-	-1,500	-1,500
(90% CI) ^b	-	(-1,500 to -390)	(-1,200 to -1,500)
% Change ^c	-	-2	-3
(90% CI) ^b	-	(-5 , 0)	(-4 , -1)
Large Lung Function Decrement ($\geq 20\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	22,000	21,000	21,000
(90% CI) ^b	(9,100 to 48,000)	(8,300 to 46,000)	(8,500 to 46,000)
Change ^c	-	-1,600	-1,200
(90% CI) ^b	-	(-760 to -2,000)	(-560 to -1,700)
% Change ^c	-	-7	-5
(90% CI) ^b	-	(-8 , -4)	(-6 , -3)

^aThe average of ten median estimates.^b90% CI denotes the 90% credible interval.^cChange relative to the proportional results.

TABLE A16 Risk Results for Philadelphia Children, Scenario 8HA7H-0.084

	Proportional	Weibull	Quadratic
Moderate/Severe Cough, Children, 1 Hr Exposures, Heavy Exertion			
Median ^a	4,000	5,000	4,600
(90% CI) ^b	(1,400 to 6,100)	(1,800 to 7,600)	(1,700 to 7,100)
Change ^c	-	980	630
(90% CI) ^b	-	(340 to 1,500)	(220 to 970)
% Change ^c	-	25	16
(90% CI) ^b	-	(24 , 25)	(15 , 16)
Moderate/Severe Chest Pain, Children, 1 Hr Exposures, Moderate Exertion			
Median ^a	3,500	2,800	2,800
(90% CI) ^b	(480 to 12,000)	(250 to 11,000)	(250 to 11,000)
Change ^c	-	-750	-720
(90% CI) ^b	-	(-230 to -1,200)	(-220 to -1,200)
% Change ^c	-	-21	-21
(90% CI) ^b	-	(-48 , -10)	(-47 , -10)
Moderate Lung Function Decrement ($\geq 15\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	27,000	26,000	26,000
(90% CI) ^b	(14,000 to 45,000)	(14,000 to 44,000)	(14,000 to 44,000)
Change ^c	-	-750	-940
(90% CI) ^b	-	(-780 to -350)	(-790 to -860)
% Change ^c	-	-3	-3
(90% CI) ^b	-	(-5 , -1)	(-5 , -2)
Large Lung Function Decrement ($\geq 20\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	11,000	10,000	10,000
(90% CI) ^b	(4,200 to 23,000)	(3,700 to 22,000)	(3,800 to 22,000)
Change ^c	-	-750	-730
(90% CI) ^b	-	(-480 to -790)	(-430 to -910)
% Change ^c	-	-7	-7
(90% CI) ^b	-	(-11 , -3)	(-10 , -4)

^aThe average of ten median estimates.^b90% CI denotes the 90% credible interval.^cChange relative to the proportional results.

TABLE A17 Risk Results for St Louis Children, Scenario 8HA7H-0.084

	Proportional	Weibull	Quadratic
Moderate/Severe Cough, Children, 1 Hr Exposures, Heavy Exertion			
Median ^a	1,900	2,300	2,000
(90% CI) ^b	(680 to 2,900)	(810 to 3,500)	(700 to 3,000)
Change ^c	-	390	64
(90% CI) ^b	-	(130 to 610)	(22 to 100)
% Change ^c	-	20	3
(90% CI) ^b	-	(19 , 21)	(3 , 3)
Moderate/Severe Chest Pain, Children, 1 Hr Exposures, Moderate Exertion			
Median ^a	1,400	1,200	1,300
(90% CI) ^b	(180 to 5,000)	(110 to 4,600)	(150 to 4,800)
Change ^c	-	-260	-110
(90% CI) ^b	-	(-71 to -450)	(-34 to -190)
% Change ^c	-	-18	-8
(90% CI) ^b	-	(-39 , -9)	(-19 , -4)
Moderate Lung Function Decrement ($\geq 15\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	10,000	11,000	10,000
(90% CI) ^b	(5,200 to 18,000)	(5,300 to 18,000)	(5,200 to 18,000)
Change ^c	-	200	-2
(90% CI) ^b	-	(38 to 540)	(-20 to 53)
% Change ^c	-	2	0
(90% CI) ^b	-	(1 , 3)	(0 , 0)
Large Lung Function Decrement ($\geq 20\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	3,700	3,700	3,700
(90% CI) ^b	(1,400 to 8,400)	(1,400 to 8,400)	(1,400 to 8,300)
Change ^c	-	-30	-29
(90% CI) ^b	-	(-15 to 51)	(-15 to -26)
% Change ^c	-	-1	-1
(90% CI) ^b	-	(-1 , 1)	(-1 , 0)

^aThe average of ten median estimates.^b90% CI denotes the 90% credible interval.^cChange relative to the proportional results.

TABLE A18 Risk Results for Washington, D.C. Children, Scenario 8HA7H-0.084

	Proportional	Weibull	Quadratic
Moderate/Severe Cough, Children, 1 Hr Exposures, Heavy Exertion			
Median ^a	3,300	3,900	3,500
(90% CI) ^b	(1,200 to 5,000)	(1,400 to 6,000)	(1,300 to 5,300)
Change ^c	-	590	190
(90% CI) ^b	-	(210 to 910)	(64 to 290)
% Change ^c	-	18	6
(90% CI) ^b	-	(17 , 18)	(5 , 6)
Moderate/Severe Chest Pain, Children, 1 Hr Exposures, Moderate Exertion			
Median ^a	2,700	2,200	2,400
(90% CI) ^b	(390 to 8,900)	(240 to 8,200)	(280 to 8,400)
Change ^c	-	-480	-320
(90% CI) ^b	-	(-160 to -770)	(-110 to -510)
% Change ^c	-	-18	-12
(90% CI) ^b	-	(-40 , -9)	(-28 , -6)
Moderate Lung Function Decrement ($\geq 15\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	20,000	20,000	20,000
(90% CI) ^b	(11,000 to 34,000)	(11,000 to 34,000)	(11,000 to 33,000)
Change ^c	-	130	-290
(90% CI) ^b	-	(-80 to 560)	(-240 to -260)
% Change ^c	-	1	-1
(90% CI) ^b	-	(-1 , 2)	(-2 , -1)
Large Lung Function Decrement ($\geq 20\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	8,100	8,000	7,900
(90% CI) ^b	(3,200 to 17,000)	(3,000 to 17,000)	(3,000 to 17,000)
Change ^c	-	-140	-240
(90% CI) ^b	-	(-150 to 51)	(-150 to -270)
% Change ^c	-	-2	-3
(90% CI) ^b	-	(-5 , 0)	(-5 , -2)

^aThe average of ten median estimates.^b90% CI denotes the 90% credible interval.^cChange relative to the proportional results.

TABLE A19 Risk Results for Houston Child-Occurrences, Scenario 8HA7H-0.084

	Proportional	Weibull	Quadratic
Moderate/Severe Cough, Children, 1 Hr Exposures, Heavy Exertion			
Median ^a	5,100	8,000	6,400
(90% CI) ^b	(1,800 to 7,900)	(2,700 to 12,000)	(2,200 to 1,000)
Change ^c	-	2,800	1,300
(90% CI) ^b	-	(860 to 4,600)	(390 to 2,100)
% Change ^c	-	55	25
(90% CI) ^b	-	(47 , 58)	(21 , 26)
Moderate/Severe Chest Pain, Children, 1 Hr Exposures, Moderate Exertion			
Median ^a	17,000	17,000	15,000
(90% CI) ^b	(2,500 to 110,000)	(1,200 to 160,000)	(1,100 to 130,000)
Change ^c	-	77	-1,200
(90% CI) ^b	-	(-1,200 to 52,000)	(-1,300 to 23,000)
% Change ^c	-	0	-8
(90% CI) ^b	-	(-50 , 49)	(-54 , 22)
Moderate Lung Function Decrement ($\geq 15\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	56,000	83,000	67,000
(90% CI) ^b	(23,000 to 120,000)	(29,000 to 180,000)	(25,000 to 140,000)
Change ^c	-	26,000	11,000
(90% CI) ^b	-	(6,300 to 67,000)	(1,700 to 29,000)
% Change ^c	-	47	19
(90% CI) ^b	-	(28 , 58)	(7 , 25)
Large Lung Function Decrement ($\geq 20\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	12,000	11,000	11,000
(90% CI) ^b	(4,700 to 36,000)	(4,000 to 48,000)	(3,800 to 40,000)
Change ^c	-	-650	-1,400
(90% CI) ^b	-	(-660 to 11,000)	(-890 to 3,700)
% Change ^c	-	-5	-11
(90% CI) ^b	-	(-14 , 31)	(-19 , 10)

^aThe average of ten median estimates.^b90% CI denotes the 90% credible interval.^cChange relative to the proportional results.

TABLE A20 Risk Results for Los Angeles Child-Occurrences, Scenario 8HA7H-0.084

	Proportional	Weibull	Quadratic
Moderate/Severe Cough, Children, 1 Hr Exposures, Heavy Exertion			
Median ^a	16,000	22,000	22,000
(90% CI) ^b	(5,700 to 25,000)	(7,400 to 34,000)	(7,800 to 35,000)
Change ^c	-	5,600	6,300
(90% CI) ^b	-	(1,700 to 9,000)	(2,000 to 10,000)
% Change ^c	-	35	39
(90% CI) ^b	-	(30 , 37)	(36 , 41)
Moderate/Severe Chest Pain, Children, 1 Hr Exposures, Moderate Exertion			
Median ^a	49,000	50,000	56,000
(90% CI) ^b	(4,600 to 330,000)	(3,300 to 430,000)	(3,000 to 450,000)
Change ^c	-	540	6,700
(90% CI) ^b	-	(-1,300 to 99,000)	(-1,600 to 120,000)
% Change ^c	-	1	14
(90% CI) ^b	-	(-29 , 30)	(-35 , 37)
Moderate Lung Function Decrement ($\geq 15\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	170,000	240,000	260,000
(90% CI) ^b	(67,000 to 360,000)	(87,000 to 510,000)	(98,000 to 550,000)
Change ^c	-	63,000	85,000
(90% CI) ^b	-	(20,000 to 150,000)	(31,000 to 180,000)
% Change ^c	-	37	49
(90% CI) ^b	-	(30 , 40)	(46 , 51)
Large Lung Function Decrement ($\geq 20\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	33,000	39,000	46,000
(90% CI) ^b	(12,000 to 110,000)	(13,000 to 140,000)	(16,000 to 160,000)
Change ^c	-	5,700	13,000
(90% CI) ^b	-	(1,700 to 34,000)	(4,400 to 52,000)
% Change ^c	-	18	41
(90% CI) ^b	-	(15 , 31)	(38 , 47)

^aThe average of ten median estimates.^b90% CI denotes the 90% credible interval.^cChange relative to the proportional results.

TABLE A21 Risk Results for New York Child-Occurrences, Scenario 8HA7H-0.084

	Proportional	Weibull	Quadratic
Moderate/Severe Cough, Children, 1 Hr Exposures, Heavy Exertion			
Median ^a	10,000	15,000	12,000
(90% CI) ^b	(3,700 to 16,000)	(5,100 to 23,000)	(4,300 to 19,000)
Change ^c	-	4,300	1,800
(90% CI) ^b	-	(1,400 to 6,900)	(600 to 2,900)
% Change ^c	-	42	18
(90% CI) ^b	-	(38 , 43)	(16 , 18)
Moderate/Severe Chest Pain, Children, 1 Hr Exposures, Moderate Exertion			
Median ^a	42,000	46,000	44,000
(90% CI) ^b	(3,700 to 280,000)	(2,800 to 380,000)	(2,900 to 320,000)
Change ^c	-	3,500	1,100
(90% CI) ^b	-	(-880 to 94,000)	(-780 to 38,000)
% Change ^c	-	8	3
(90% CI) ^b	-	(-24 , 33)	(-21 , 13)
Moderate Lung Function Decrement ($\geq 15\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	220,000	290,000	250,000
(90% CI) ^b	(91,000 to 440,000)	(110,000 to 600,000)	(100,000 to 510,000)
Change ^c	-	70,000	29,000
(90% CI) ^b	-	(22,000 to 160,000)	(8,900 to 66,000)
% Change ^c	-	32	13
(90% CI) ^b	-	(24 , 37)	(10 , 15)
Large Lung Function Decrement ($\geq 20\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	50,000	56,000	53,000
(90% CI) ^b	(19,000 to 150,000)	(20,000 to 180,000)	(19,000 to 160,000)
Change ^c	-	5,600	2,300
(90% CI) ^b	-	(1,400 to 37,000)	(470 to 15,000)
% Change ^c	-	11	5
(90% CI) ^b	-	(8 , 25)	(3 , 10)

^aThe average of ten median estimates.^b90% CI denotes the 90% credible interval.^cChange relative to the proportional results.

TABLE A22 Risk Results for Philadelphia Child-Occurrences, Scenario 8HA7H-0.084

	Proportional	Weibull	Quadratic
Moderate/Severe Cough, Children, 1 Hr Exposures, Heavy Exertion			
Median ^a	6,300	9,200	8,000
(90% CI) ^b	(2,200 to 9,800)	(3,100 to 14,000)	(2,800 to 12,000)
Change ^c	-	2,900	1,700
(90% CI) ^b	-	(950 to 4,500)	(570 to 2,700)
% Change ^c	-	46	27
(90% CI) ^b	-	(43 , 46)	(26 , 27)
Moderate/Severe Chest Pain, Children, 1 Hr Exposures, Moderate Exertion			
Median ^a	18,000	22,000	21,000
(90% CI) ^b	(1,100 to 150,000)	(760 to 210,000)	(780 to 190,000)
Change ^c	-	3,700	2,200
(90% CI) ^b	-	(-340 to 64,000)	(-310 to 37,000)
% Change ^c	-	20	12
(90% CI) ^b	-	(-31 , 43)	(-28 , 24)
Moderate Lung Function Decrement ($\geq 15\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	110,000	160,000	140,000
(90% CI) ^b	(43,000 to 240,000)	(57,000 to 360,000)	(51,000 to 300,000)
Change ^c	-	50,000	29,000
(90% CI) ^b	-	(15,000 to 120,000)	(8,500 to 68,000)
% Change ^c	-	45	26
(90% CI) ^b	-	(34 , 51)	(20 , 29)
Large Lung Function Decrement ($\geq 20\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	20,000	23,000	22,000
(90% CI) ^b	(7,200 to 70,000)	(7,600 to 95,000)	(7,400 to 85,000)
Change ^c	-	2,700	1,800
(90% CI) ^b	-	(440 to 25,000)	(250 to 15,000)
% Change ^c	-	13	9
(90% CI) ^b	-	(6 , 36)	(3 , 21)

^aThe average of ten median estimates.^b90% CI denotes the 90% credible interval.^cChange relative to the proportional results.

TABLE A23 Risk Results for St Louis Child-Occurrences, Scenario 8HA7H-0.084

	Proportional	Weibull	Quadratic
Moderate/Severe Cough, Children, 1 Hr Exposures, Heavy Exertion			
Median ^a	3,100	4,400	3,300
(90% CI) ^b	(1,100 to 4,800)	(1,500 to 6,900)	(1,100 to 5,200)
Change ^c	-	1,300	220
(90% CI) ^b	-	(430 to 2,100)	(74 to 340)
% Change ^c	-	43	7
(90% CI) ^b	-	(40 , 43)	(7 , 7)
Moderate/Severe Chest Pain, Children, 1 Hr Exposures, Moderate Exertion			
Median ^a	8,500	10,000	8,800
(90% CI) ^b	(480 to 73,000)	(390 to 100,000)	(430 to 78,000)
Change ^c	-	1,900	290
(90% CI) ^b	-	(-87 to 32,000)	(-50 to 5,600)
% Change ^c	-	22	3
(90% CI) ^b	-	(-18 , 44)	(-11 , 8)
Moderate Lung Function Decrement ($\geq 15\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	48,000	71,000	52,000
(90% CI) ^b	(18,000 to 100,000)	(25,000 to 160,000)	(19,000 to 110,000)
Change ^c	-	23,000	3,800
(90% CI) ^b	-	(7,200 to 54,000)	(1,200 to 8,800)
% Change ^c	-	48	8
(90% CI) ^b	-	(40 , 53)	(7 , 9)
Large Lung Function Decrement ($\geq 20\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	8,100	9,800	8,400
(90% CI) ^b	(2,700 to 30,000)	(3,200 to 42,000)	(2,800 to 32,000)
Change ^c	-	1,800	330
(90% CI) ^b	-	(500 to 12,000)	(80 to 2,100)
% Change ^c	-	22	4
(90% CI) ^b	-	(18 , 41)	(3 , 7)

^aThe average of ten median estimates.^b90% CI denotes the 90% credible interval.^cChange relative to the proportional results.

TABLE A24 Risk Results for Washington, D.C. Child-Occurrences, Scenario 8HA7H-0.084

	Proportional	Weibull	Quadratic
Moderate/Severe Cough, Children, 1 Hr Exposures, Heavy Exertion			
Median ^a	5,600	7,600	6,200
(90% CI) ^b	(2,000 to 8,700)	(2,600 to 12,000)	(2,100 to 9,600)
Change ^c	-	2,000	560
(90% CI) ^b	-	(670 to 3,200)	(180 to 880)
% Change ^c	-	36	10
(90% CI) ^b	-	(34 , 36)	(9 , 10)
Moderate/Severe Chest Pain, Children, 1 Hr Exposures, Moderate Exertion			
Median ^a	18,000	22,000	19,000
(90% CI) ^b	(1,000 to 140,000)	(840 to 190,000)	(870 to 150,000)
Change ^c	-	3,900	100
(90% CI) ^b	-	(-180 to 50,000)	(-150 to 14,000)
% Change ^c	-	22	6
(90% CI) ^b	-	(-17 , 36)	(-15 , 10)
Moderate Lung Function Decrement ($\geq 15\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	98,000	140,000	110,000
(90% CI) ^b	(37,000 to 210,000)	(50,000 to 290,000)	(41,000 to 230,000)
Change ^c	-	38,000	12,000
(90% CI) ^b	-	(13,000 to 87,000)	(3,900 to 26,000)
% Change ^c	-	39	12
(90% CI) ^b	-	(34 , 42)	(11 , 13)
Large Lung Function Decrement ($\geq 20\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	18,000	22,000	19,000
(90% CI) ^b	(6,200 to 62,000)	(7,300 to 83,000)	(6,500 to 68,000)
Change ^c	-	4,300	1,400
(90% CI) ^b	-	(1,200 to 22,000)	(350 to 6,800)
% Change ^c	-	24	8
(90% CI) ^b	-	(19 , 35)	(6 , 11)

^aThe average of ten median estimates.^b90% CI denotes the 90% credible interval.^cChange relative to the proportional results.

TABLE A25 Risk Results for Houston Children, Scenario 8HA5H-0.084

	Proportional	Weibull	Quadratic
Moderate/Severe Cough, Children, 1 Hr Exposures, Heavy Exertion			
Median ^a	2,600	3,300	3,000
(90% CI) ^b	(950 to 4,000)	(1,200 to 5,200)	(1,100 to 4,700)
Change ^c	-	740	460
(90% CI) ^b	-	(220 to 1,200)	(130 to 760)
% Change ^c	-	29	18
(90% CI) ^b	-	(23 , 30)	(13 , 19)
Moderate/Severe Chest Pain, Children, 1 Hr Exposures, Moderate Exertion			
Median ^a	3,600	2,400	2,100
(90% CI) ^b	(860 to 10,000)	(340 to 8,300)	(230 to 7,800)
Change ^c	-	-1,200	-1,500
(90% CI) ^b	-	(-520 to -1,900)	(-630 to -2,400)
% Change ^c	-	-34	-42
(90% CI) ^b	-	(-60 , -19)	(-73 , -24)
Moderate Lung Function Decrement ($\geq 15\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	16,000	15,000	14,000
(90% CI) ^b	(8,500 to 28,000)	(7,500 to 28,000)	(7,000 to 26,000)
Change ^c	-	-950	-2,000
(90% CI) ^b	-	(-910 to -530)	(-1,500 to -2,100)
% Change ^c	-	-6	-12
(90% CI) ^b	-	(-11 , -2)	(-18 , -7)
Large Lung Function Decrement ($\geq 20\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	6,100	5,200	4,700
(90% CI) ^b	(2,500 to 13,000)	(1,900 to 12,000)	(1,700 to 11,000)
Change ^c	-	-910	-1,400
(90% CI) ^b	-	(-520 to -1,100)	(-710 to -2,000)
% Change ^c	-	-15	-23
(90% CI) ^b	-	(-21 , -8)	(-29 , -15)

^aThe average of ten median estimates.^b90% CI denotes the 90% credible interval.^cChange relative to the proportional results.

TABLE A26 Risk Results for Los Angeles Children, Scenario 8HA5H-0.084

	Proportional	Weibull	Quadratic
Moderate/Severe Cough, Children, 1 Hr Exposures, Heavy Exertion			
Median ^a	8,400	9,900	10,000
(90% CI) ^b	(3,100 to 13,000)	(3,500 to 15,000)	(3,600 to 16,000)
Change ^c	-	1,500	1,700
(90% CI) ^b	-	(430 to 2,400)	(560 to 2,700)
% Change ^c	-	17	20
(90% CI) ^b	-	(14 , 19)	(18 , 21)
Moderate/Severe Chest Pain, Children, 1 Hr Exposures, Moderate Exertion			
Median ^a	7,200	5,100	4,300
(90% CI) ^b	(1,200 to 25,000)	(700 to 21,000)	(410 to 19,000)
Change ^c	-	-2,100	-3,000
(90% CI) ^b	-	(-530 to -4,500)	(-820 to -5,800)
% Change ^c	-	-29	-41
(90% CI) ^b	-	(-43 , -18)	(-67 , -23)
Moderate Lung Function Decrement ($\geq 15\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	34,000	37,000	37,000
(90% CI) ^b	(16,000 to 63,000)	(17,000 to 69,000)	(18,000 to 68,000)
Change ^c	-	2,700	3,300
(90% CI) ^b	-	(1,000 to 5,800)	(1,700 to 5,600)
% Change ^c	-	8	10
(90% CI) ^b	-	(6 , 9)	(11 , 9)
Large Lung Function Decrement ($\geq 20\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	10,000	11,000	12,000
(90% CI) ^b	(3,900 to 26,000)	(4,100 to 27,000)	(4,400 to 28,000)
Change ^c	-	430	1,200
(90% CI) ^b	-	(150 to 1,600)	(510 to 2,600)
% Change ^c	-	4	12
(90% CI) ^b	-	(4 , 6)	(13 , 10)

^aThe average of ten median estimates.^b90% CI denotes the 90% credible interval.^cChange relative to the proportional results.

TABLE A27 Risk Results for New York Children, Scenario 8HA5H-0.084

	Proportional	Weibull	Quadratic
Moderate/Severe Cough, Children, 1 Hr Exposures, Heavy Exertion			
Median ^a	6,300	8,200	7,000
(90% CI) ^b	(2,200 to 9,600)	(2,900 to 13,000)	(2,500 to 11,000)
Change ^c	-	1,900	790
(90% CI) ^b	-	(610 to 3,000)	(250 to 1,300)
% Change ^c	-	30	13
(90% CI) ^b	-	(27 , 31)	(11 , 13)
Moderate/Severe Chest Pain, Children, 1 Hr Exposures, Moderate Exertion			
Median ^a	7,200	5,600	5,800
(90% CI) ^b	(990 to 26,000)	(590 to 23,000)	(580 to 24,000)
Change ^c	-	-1,600	-1,500
(90% CI) ^b	-	(-400 to -3,200)	(-420 to -2,800)
% Change ^c	-	-22	-21
(90% CI) ^b	-	(-40 , -12)	(-42 , -10)
Moderate Lung Function Decrement ($\geq 15\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	49,000	50,000	49,000
(90% CI) ^b	(25,000 to 86,000)	(25,000 to 91,000)	(24,000 to 87,000)
Change ^c	-	1,500	-100
(90% CI) ^b	-	(140 to 4,200)	(-430 to 800)
% Change ^c	-	3	0
(90% CI) ^b	-	(1 , 5)	(-2 , 1)
Large Lung Function Decrement ($\geq 20\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	17,000	17,000	17,000
(90% CI) ^b	(6,600 to 39,000)	(6,400 to 39,000)	(6,300 to 38,000)
Change ^c	-	-300	-530
(90% CI) ^b	-	(-230 to 510)	(-340 to -350)
% Change ^c	-	-2	-3
(90% CI) ^b	-	(-4 , 1)	(-5 , -1)

^aThe average of ten median estimates.^b90% CI denotes the 90% credible interval.^cChange relative to the proportional results.

TABLE A28 Risk Results for Philadelphia Children, Scenario 8HA5H-0.084

	Proportional	Weibull	Quadratic
Moderate/Severe Cough, Children, 1 Hr Exposures, Heavy Exertion			
Median ^a	3,600	4,800	4,400
(90% CI) ^b	(1,300 to 5,500)	(1,700 to 7,400)	(1,600 to 6,700)
Change ^c	-	1,200	780
(90% CI) ^b	-	(410 to 1,800)	(280 to 1,200)
% Change ^c	-	33	22
(90% CI) ^b	-	(32 , 33)	(22 , 22)
Moderate/Severe Chest Pain, Children, 1 Hr Exposures, Moderate Exertion			
Median ^a	3,000	2,600	2,600
(90% CI) ^b	(350 to 11,000)	(210 to 10,000)	(200 to 10,000)
Change ^c	-	-410	-440
(90% CI) ^b	-	(-140 to -580)	(-140 to -670)
% Change ^c	-	-14	-15
(90% CI) ^b	-	(-39 , -5)	(-41 , -6)
Moderate Lung Function Decrement ($\geq 15\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	24,000	25,000	24,000
(90% CI) ^b	(12,000 to 40,000)	(13,000 to 42,000)	(12,000 to 42,000)
Change ^c	-	1,200	640
(90% CI) ^b	-	(450 to 2,400)	(180 to 1,400)
% Change ^c	-	5	3
(90% CI) ^b	-	(4 , 6)	(1 , 3)
Large Lung Function Decrement ($\geq 20\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	8,900	9,200	9,000
(90% CI) ^b	(3,400 to 20,000)	(3,300 to 21,000)	(3,300 to 20,000)
Change ^c	-	270	92
(90% CI) ^b	-	(-24 to 1,000)	(-86 to 580)
% Change ^c	-	3	1
(90% CI) ^b	-	(-1 , 5)	(-3 , 3)

^aThe average of ten median estimates.^b90% CI denotes the 90% credible interval.^cChange relative to the proportional results.

TABLE A29 Risk Results for St Louis Children, Scenario 8HA5H-0.084

	Proportional	Weibull	Quadratic
Moderate/Severe Cough, Children, 1 Hr Exposures, Heavy Exertion			
Median ^a	1,600	2,100	1,800
(90% CI) ^b	(570 to 2,500)	(720 to 3,200)	(620 to 2,700)
Change ^c	-	440	140
(90% CI) ^b	-	(150 to 700)	(51 to 220)
% Change ^c	-	27	9
(90% CI) ^b	-	(26 , 28)	(9 , 9)
Moderate/Severe Chest Pain, Children, 1 Hr Exposures, Moderate Exertion			
Median ^a	1,200	980	1,100
(90% CI) ^b	(130 to 4,500)	(80 to 4,200)	(100 to 4,400)
Change ^c	-	-200	-98
(90% CI) ^b	-	(-50 to -350)	(-28 to -170)
% Change ^c	-	-17	-8
(90% CI) ^b	-	(-39 , -8)	(-22 , -4)
Moderate Lung Function Decrement ($\geq 15\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	8,800	9,300	8,900
(90% CI) ^b	(4,300 to 16,000)	(4,500 to 17,000)	(4,300 to 16,000)
Change ^c	-	570	120
(90% CI) ^b	-	(240 to 1,100)	(46 to 250)
% Change ^c	-	6	1
(90% CI) ^b	-	(6 , 7)	(1 , 2)
Large Lung Function Decrement ($\geq 20\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	2,900	3,000	2,900
(90% CI) ^b	(1,100 to 6,900)	(1,100 to 7,300)	(1,100 to 7,000)
Change ^c	-	130	23
(90% CI) ^b	-	(35 to 410)	(-1 to 93)
% Change ^c	-	5	1
(90% CI) ^b	-	(3 , 6)	(0 , 1)

^aThe average of ten median estimates.^b90% CI denotes the 90% credible interval.^cChange relative to the proportional results.

TABLE A30 Risk Results for Washington, D.C. Children, Scenario 8HA5H-0.084

	Proportional	Weibull	Quadratic
Moderate/Severe Cough, Children, 1 Hr Exposures, Heavy Exertion			
Median ^a	3,000	3,700	3,300
(90% CI) ^b	(1,100 to 4,600)	(1,300 to 5,700)	(1,200 to 5,100)
Change ^c	-	670	280
(90% CI) ^b	-	(240 to 1,000)	(99 to 430)
% Change ^c	-	22	9
(90% CI) ^b	-	(22 , 22)	(9 , 9)
Moderate/Severe Chest Pain, Children, 1 Hr Exposures, Moderate Exertion			
Median ^a	2,400	2,000	2,100
(90% CI) ^b	(300 to 8,300)	(190 to 7,800)	(220 to 7,900)
Change ^c	-	-320	-240
(90% CI) ^b	-	(-110 to -500)	(-83 to -390)
% Change ^c	-	-14	-10
(90% CI) ^b	-	(-36 , -6)	(-28 , -5)
Moderate Lung Function Decrement ($\geq 15\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	18,000	19,000	18,000
(90% CI) ^b	(9,500 to 31,000)	(9,900 to 33,000)	(9,600 to 31,000)
Change ^c	-	1,000	320
(90% CI) ^b	-	(450 to 1,800)	(140 to 580)
% Change ^c	-	6	2
(90% CI) ^b	-	(5 , 6)	(1 , 2)
Large Lung Function Decrement ($\geq 20\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	6,900	7,300	7,000
(90% CI) ^b	(2,700 to 15,000)	(2,700 to 16,000)	(2,600 to 15,000)
Change ^c	-	320	95
(90% CI) ^b	-	(23 to 940)	(-20 to 330)
% Change ^c	-	5	1
(90% CI) ^b	-	(1 , 6)	(-1 , 2)

^aThe average of ten median estimates.^b90% CI denotes the 90% credible interval.^cChange relative to the proportional results.

TABLE A31 Risk Results for Houston Child-Occurrences, Scenario 8HA5H-0.084

	Proportional	Weibull	Quadratic
Moderate/Severe Cough, Children, 1 Hr Exposures, Heavy Exertion			
Median ^a	3,900	6,800	5,500
(90% CI) ^b	(1,400 to 6,000)	(2,300 to 11,000)	(1,900 to 8,600)
Change ^c	-	3,000	1,600
(90% CI) ^b	-	(900 to 4,800)	(480 to 2,600)
% Change ^c	-	77	41
(90% CI) ^b	-	(66 , 80)	(35 , 43)
Moderate/Severe Chest Pain, Children, 1 Hr Exposures, Moderate Exertion			
Median ^a	11,000	12,000	11,000
(90% CI) ^b	(1,500 to 78,000)	(680 to 130,000)	(540 to 110,000)
Change ^c	-	620	-490
(90% CI) ^b	-	(-820 to 54,000)	(-960 to 30,000)
% Change ^c	-	5	-4
(90% CI) ^b	-	(-55 , 69)	(-64 , 38)
Moderate Lung Function Decrement ($\geq 15\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	38,000	65,000	52,000
(90% CI) ^b	(15,000 to 80,000)	(22,000 to 150,000)	(18,000 to 120,000)
Change ^c	-	26,000	14,000
(90% CI) ^b	-	(6,600 to 66,000)	(2,800 to 36,000)
% Change ^c	-	68	36
(90% CI) ^b	-	(43 , 83)	(19 , 45)
Large Lung Function Decrement ($\geq 20\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	7,700	7,500	6,800
(90% CI) ^b	(3,000 to 25,000)	(2,600 to 36,000)	(2,300 to 30,000)
Change ^c	-	-250	-990
(90% CI) ^b	-	(-380 to 11,000)	(-640 to 5,300)
% Change ^c	-	-3	-13
(90% CI) ^b	-	(-13 , 46)	(-21 , 21)

^aThe average of ten median estimates.^b90% CI denotes the 90% credible interval.^cChange relative to the proportional results.

TABLE A32 Risk Results for Los Angeles Child-Occurrences, Scenario 8HA5H-0.084

	Proportional	Weibull	Quadratic
Moderate/Severe Cough, Children, 1 Hr Exposures, Heavy Exertion			
Median ^a	14,000	19,000	20,000
(90% CI) ^b	(4,800 to 21,000)	(6,600 to 30,000)	(6,900 to 31,000)
Change ^c	-	5,700	6,400
(90% CI) ^b	-	(1,700 to 9,200)	(2,100 to 10,000)
% Change ^c	-	42	47
(90% CI) ^b	-	(36 , 44)	(44 , 48)
Moderate/Severe Chest Pain, Children, 1 Hr Exposures, Moderate Exertion			
Median ^a	38,000	41,000	47,000
(90% CI) ^b	(3,100 to 280,000)	(2,300 to 380,000)	(2,300 to 400,000)
Change ^c	-	2,400	8,800
(90% CI) ^b	-	(-790 to 100,000)	(-810 to 120,000)
% Change ^c	-	6	23
(90% CI) ^b	-	(-25 , 37)	(-26 , 44)
Moderate Lung Function Decrement ($\geq 15\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	140,000	200,000	220,000
(90% CI) ^b	(51,000 to 290,000)	(72,000 to 440,000)	(83,000 to 480,000)
Change ^c	-	64,000	86,000
(90% CI) ^b	-	(21,000 to 150,000)	(32,000 to 180,000)
% Change ^c	-	46	62
(90% CI) ^b	-	(40 , 50)	(62 , 63)
Large Lung Function Decrement ($\geq 20\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	23,000	29,000	38,000
(90% CI) ^b	(8,000 to 85,000)	(9,900 to 120,000)	(13,000 to 140,000)
Change ^c	-	6,100	14,000
(90% CI) ^b	-	(1,800 to 35,000)	(4,700 to 53,000)
% Change ^c	-	26	61
(90% CI) ^b	-	(23 , 41)	(58 , 62)

^aThe average of ten median estimates.^b90% CI denotes the 90% credible interval.^cChange relative to the proportional results.

TABLE A33 Risk Results for New York Child-Occurrences, Scenario 8HA5H-0.084

	Proportional	Weibull	Quadratic
Moderate/Severe Cough, Children, 1 Hr Exposures, Heavy Exertion			
Median ^a	8,400	13,000	11,000
(90% CI) ^b	(2,900 to 13,000)	(4,400 to 21,000)	(3,600 to 17,000)
Change ^c	-	4,700	2,200
(90% CI) ^b	-	(1,500 to 7,500)	(700 to 3,500)
% Change ^c	-	55	26
(90% CI) ^b	-	(51 , 57)	(24 , 27)
Moderate/Severe Chest Pain, Children, 1 Hr Exposures, Moderate Exertion			
Median ^a	31,000	35,000	33,000
(90% CI) ^b	(2,200 to 230,000)	(1,600 to 330,000)	(1,600 to 280,000)
Change ^c	-	4,300	2,000
(90% CI) ^b	-	(-550 to 100,000)	(-590 to 50,000)
% Change ^c	-	14	6
(90% CI) ^b	-	(-25 , 45)	(-27 , 22)
Moderate Lung Function Decrement ($\geq 15\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	170,000	240,000	200,000
(90% CI) ^b	(66,000 to 340,000)	(89,000 to 520,000)	(78,000 to 430,000)
Change ^c	-	76,000	38,000
(90% CI) ^b	-	(23,000 to 180,000)	(12,000 to 89,000)
% Change ^c	-	46	23
(90% CI) ^b	-	(35 , 52)	(18 , 26)
Large Lung Function Decrement ($\geq 20\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	34,000	39,000	37,000
(90% CI) ^b	(12,000 to 110,000)	(14,000 to 150,000)	(13,000 to 130,000)
Change ^c	-	5,600	3,300
(90% CI) ^b	-	(1,500 to 40,000)	(820 to 21,000)
% Change ^c	-	17	10
(90% CI) ^b	-	(13 , 37)	(7 , 19)

^aThe average of ten median estimates.^b90% CI denotes the 90% credible interval.^cChange relative to the proportional results.

TABLE A34 Risk Results for Philadelphia Child-Occurrences, Scenario 8HA5H-0.084

	Proportional	Weibull	Quadratic
Moderate/Severe Cough, Children, 1 Hr Exposures, Heavy Exertion			
Median ^a	5,600	8,900	7,600
(90% CI) ^b	(1,900 to 8,700)	(3,000 to 14,000)	(2,600 to 12,000)
Change ^c	-	3,300	2,000
(90% CI) ^b	-	(1,100 to 5,200)	(670 to 3,100)
% Change ^c	-	59	35
(90% CI) ^b	-	(56 , 59)	(35 , 36)
Moderate/Severe Chest Pain, Children, 1 Hr Exposures, Moderate Exertion			
Median ^a	15,000	20,000	18,000
(90% CI) ^b	(760 to 130,000)	(610 to 210,000)	(600 to 180,000)
Change ^c	-	5,400	3,500
(90% CI) ^b	-	(-150 to 78,000)	(-150 to 46,000)
% Change ^c	-	37	24
(90% CI) ^b	-	(-19 , 60)	(-20 , 36)
Moderate Lung Function Decrement ($\geq 15\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	92,000	150,000	130,000
(90% CI) ^b	(34,000 to 200,000)	(53,000 to 340,000)	(46,000 to 290,000)
Change ^c	-	62,000	37,000
(90% CI) ^b	-	(19,000 to 140,000)	(12,000 to 86,000)
% Change ^c	-	67	40
(90% CI) ^b	-	(55 , 72)	(34 , 43)
Large Lung Function Decrement ($\geq 20\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	15,000	20,000	18,000
(90% CI) ^b	(5,200 to 56,000)	(6,400 to 89,000)	(6,000 to 76,000)
Change ^c	-	4,600	3,200
(90% CI) ^b	-	(1,200 to 32,000)	(800 to 20,000)
% Change ^c	-	30	21
(90% CI) ^b	-	(22 , 57)	(15 , 36)

^aThe average of ten median estimates.^b90% CI denotes the 90% credible interval.^cChange relative to the proportional results.

TABLE A35 Risk Results for St Louis Child-Occurrences, Scenario 8HA5H-0.084

	Proportional	Weibull	Quadratic
Moderate/Severe Cough, Children, 1 Hr Exposures, Heavy Exertion			
Median ^a	2,600	4,000	3,000
(90% CI) ^b	(880 to 4,000)	(1,400 to 6,400)	(1,000 to 4,700)
Change ^c	-	1,500	420
(90% CI) ^b	-	(470 to 2,300)	(140 to 650)
% Change ^c	-	57	16
(90% CI) ^b	-	(54 , 57)	(16 , 16)
Moderate/Severe Chest Pain, Children, 1 Hr Exposures, Moderate Exertion			
Median ^a	6,500	8,400	7,000
(90% CI) ^b	(310 to 61,000)	(260 to 94,000)	(280 to 69,000)
Change ^c	-	2,000	510
(90% CI) ^b	-	(-46 to 34,000)	(-30 to 8,500)
% Change ^c	-	30	8
(90% CI) ^b	-	(-15 , 55)	(-10 , 14)
Moderate Lung Function Decrement ($\geq 15\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	38,000	62,000	44,000
(90% CI) ^b	(13,000 to 83,000)	(21,000 to 140,000)	(15,000 to 97,000)
Change ^c	-	24,000	6,000
(90% CI) ^b	-	(7,500 to 56,000)	(1,900 to 14,000)
% Change ^c	-	64	16
(90% CI) ^b	-	(56 , 68)	(14 , 17)
Large Lung Function Decrement ($\geq 20\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	5,400	7,300	6,000
(90% CI) ^b	(1,800 to 22,000)	(2,300 to 35,000)	(1,900 to 26,000)
Change ^c	-	1,900	550
(90% CI) ^b	-	(540 to 13,000)	(150 to 3,200)
% Change ^c	-	35	10
(90% CI) ^b	-	(30 , 57)	(8 , 14)

^aThe average of ten median estimates.^b90% CI denotes the 90% credible interval.^cChange relative to the proportional results.

TABLE A36 Risk Results for Washington, D.C. Child-Occurrences, Scenario 8HA5H-0.084

	Proportional	Weibull	Quadratic
Moderate/Severe Cough, Children, 1 Hr Exposures, Heavy Exertion			
Median ^a	5,100	7,300	5,900
(90% CI) ^b	(1,700 to 7,900)	(2,500 to 11,000)	(2,000 to 9,100)
Change ^c	-	2,200	780
(90% CI) ^b	-	(740 to 3,500)	(260 to 1,200)
% Change ^c	-	44	15
(90% CI) ^b	-	(42 , 44)	(15 , 16)
Moderate/Severe Chest Pain, Children, 1 Hr Exposures, Moderate Exertion			
Median ^a	15,000	19,000	16,000
(90% CI) ^b	(760 to 120,000)	(660 to 180,000)	(670 to 140,000)
Change ^c	-	4,700	1,600
(90% CI) ^b	-	(-95 to 56,000)	(-87 to 19,000)
% Change ^c	-	32	11
(90% CI) ^b	-	(-13 , 45)	(-12 , 16)
Moderate Lung Function Decrement ($\geq 15\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	85,000	130,000	10,000
(90% CI) ^b	(31,000 to 180,000)	(46,000 to 280,000)	(36,000 to 220,000)
Change ^c	-	43,000	15,000
(90% CI) ^b	-	(14,000 to 98,000)	(5,000 to 33,000)
% Change ^c	-	51	17
(90% CI) ^b	-	(46 , 53)	(16 , 18)
Large Lung Function Decrement ($\geq 20\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	14,000	19,000	16,000
(90% CI) ^b	(4,800 to 52,000)	(6,100 to 76,000)	(5,300 to 61,000)
Change ^c	-	4,900	1,800
(90% CI) ^b	-	(1,300 to 25,000)	(480 to 8,600)
% Change ^c	-	35	13
(90% CI) ^b	-	(28 , 47)	(10 , 17)

^aThe average of ten median estimates.^b90% CI denotes the 90% credible interval.^cChange relative to the proportional results.

TABLE A37 Risk Results for Houston Children, Scenario 8HA3H-0.084

	Proportional	Weibull	Quadratic
Moderate/Severe Cough, Children, 1 Hr Exposures, Heavy Exertion			
Median ^a	2,100	3,200	2,800
(90% CI) ^b	(750 to 3,200)	(1,100 to 4,900)	(990 to 4,400)
Change ^c	-	1,100	750
(90% CI) ^b	-	(360 to 1,700)	(240 to 1,200)
% Change ^c	-	53	36
(90% CI) ^b	-	(48 , 54)	(32 , 37)
Moderate/Severe Chest Pain, Children, 1 Hr Exposures, Moderate Exertion			
Median ^a	3,000	2,100	1,900
(90% CI) ^b	(610 to 8,900)	(270 to 7,700)	(180 to 7,300)
Change ^c	-	-820	-1,100
(90% CI) ^b	-	(-340 to -1,200)	(-430 to -1,600)
% Change ^c	-	-28	-37
(90% CI) ^b	-	(-56 , -13)	(-71 , -18)
Moderate Lung Function Decrement ($\geq 15\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	14,000	14,000	13,000
(90% CI) ^b	(6,800 to 24,000)	(6,700 to 26,000)	(6,200 to 24,000)
Change ^c	-	320	-620
(90% CI) ^b	-	(-120 to 1,300)	(-640 to -180)
% Change ^c	-	2	-5
(90% CI) ^b	-	(-2 , 5)	(-9 , -1)
Large Lung Function Decrement ($\geq 20\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	4,800	4,500	4,100
(90% CI) ^b	(1,900 to 11,000)	(1,600 to 11,000)	(1,500 to 10,000)
Change ^c	-	-280	-700
(90% CI) ^b	-	(-220 to 23)	(-390 to -820)
% Change ^c	-	-6	-15
(90% CI) ^b	-	(-12 , 0)	(-21 , -8)

^aThe average of ten median estimates.^b90% CI denotes the 90% credible interval.^cChange relative to the proportional results.

TABLE A38 Risk Results for Los Angeles Children, Scenario 8HA3H-0.084

	Proportional	Weibull	Quadratic
Moderate/Severe Cough, Children, 1 Hr Exposures, Heavy Exertion			
Median ^a	8,100	10,000	10,000
(90% CI) ^b	(3,000 to 12,000)	(3,600 to 16,000)	(3,700 to 16,000)
Change ^c	-	2,000	2,100
(90% CI) ^b	-	(620 to 3,200)	(710 to 3,300)
% Change ^c	-	24	26
(90% CI) ^b	-	(21 , 25)	(24 , 27)
Moderate/Severe Chest Pain, Children, 1 Hr Exposures, Moderate Exertion			
Median ^a	6,800	5,000	4,300
(90% CI) ^b	(1,100 to 24,000)	(640 to 21,000)	(400 to 20,000)
Change ^c	-	-1,700	-2,400
(90% CI) ^b	-	(-450 to -3,500)	(-700 to -4,600)
% Change ^c	-	-26	-36
(90% CI) ^b	-	(-41 , -14)	(-64 , -19)
Moderate Lung Function Decrement ($\geq 15\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	32,000	37,000	37,000
(90% CI) ^b	(15,000 to 60,000)	(17,000 to 69,000)	(17,000 to 69,000)
Change ^c	-	4,600	5,100
(90% CI) ^b	-	(1,900 to 9,300)	(2,600 to 8,900)
% Change ^c	-	14	16
(90% CI) ^b	-	(13 , 16)	(17 , 15)
Large Lung Function Decrement ($\geq 20\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	9,600	11,000	11,000
(90% CI) ^b	(3,600 to 24,000)	(3,900 to 27,000)	(4,300 to 28,000)
Change ^c	-	1,100	1,800
(90% CI) ^b	-	(370 to 3,100)	(710 to 4,000)
% Change ^c	-	11	19
(90% CI) ^b	-	(10 , 13)	(20 , 17)

^aThe average of ten median estimates.^b90% CI denotes the 90% credible interval.^cChange relative to the proportional results.

TABLE A39 Risk Results for New York Children, Scenario 8HA3H-0.084

	Proportional	Weibull	Quadratic
Moderate/Severe Cough, Children, 1 Hr Exposures, Heavy Exertion			
Median ^a	4,600	6,800	6,000
(90% CI) ^b	(1,600 to 7,100)	(2,300 to 11,000)	(2,100 to 9,300)
Change ^c	-	2,200	1,400
(90% CI) ^b	-	(730 to 3,500)	(470 to 2,200)
% Change ^c	-	49	30
(90% CI) ^b	-	(46 , 50)	(29 , 30)
Moderate/Severe Chest Pain, Children, 1 Hr Exposures, Moderate Exertion			
Median ^a	5,000	3,900	3,800
(90% CI) ^b	(510 to 21,000)	(290 to 19,000)	(250 to 19,000)
Change ^c	-	-1,100	-1,200
(90% CI) ^b	-	(-220 to -2,200)	(-260 to -2,500)
% Change ^c	-	-22	-24
(90% CI) ^b	-	(-44 , -10)	(-51 , -12)
Moderate Lung Function Decrement ($\geq 15\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	35,000	39,000	37,000
(90% CI) ^b	(16,000 to 65,000)	(18,000 to 73,000)	(17,000 to 69,000)
Change ^c	-	3,600	1,700
(90% CI) ^b	-	(1,400 to 7,500)	(570 to 3,800)
% Change ^c	-	10	5
(90% CI) ^b	-	(8 , 12)	(4 , 6)
Large Lung Function Decrement ($\geq 20\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	11,000	11,000	11,000
(90% CI) ^b	(3,800 to 27,000)	(3,900 to 29,000)	(3,800 to 28,000)
Change ^c	-	640	220
(90% CI) ^b	-	(190 to 2,300)	(11 to 1,100)
% Change ^c	-	6	2
(90% CI) ^b	-	(5 , 9)	(0 , 4)

^aThe average of ten median estimates.^b90% CI denotes the 90% credible interval.^cChange relative to the proportional results.

TABLE A40 Risk Results for Philadelphia Children, Scenario 8HA3H-0.084

	Proportional	Weibull	Quadratic
Moderate/Severe Cough, Children, 1 Hr Exposures, Heavy Exertion			
Median ^a	3,200	4,500	4,100
(90% CI) ^b	(1,100 to 4,900)	(1,600 to 7,000)	(1,400 to 6,400)
Change ^c	-	1,400	940
(90% CI) ^b	-	(470 to 2,100)	(320 to 1,500)
% Change ^c	-	43	30
(90% CI) ^b	-	(42 , 43)	(29 , 30)
Moderate/Severe Chest Pain, Children, 1 Hr Exposures, Moderate Exertion			
Median ^a	2,500	2,300	2,200
(90% CI) ^b	(240 to 9,800)	(160 to 9,700)	(150 to 9,500)
Change ^c	-	-210	-260
(90% CI) ^b	-	(-80 to -160)	(-91 to -300)
% Change ^c	-	-8	-10
(90% CI) ^b	-	(-33 , -2)	(-38 , -3)
Moderate Lung Function Decrement ($\geq 15\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	20,000	23,000	22,000
(90% CI) ^b	(9,900 to 35,000)	(11,000 to 40,000)	(11,000 to 38,000)
Change ^c	-	2,700	1,700
(90% CI) ^b	-	(1,400 to 4,500)	(840 to 3,000)
% Change ^c	-	13	9
(90% CI) ^b	-	(14 , 13)	(8 , 8)
Large Lung Function Decrement ($\geq 20\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	7,000	8,000	7,600
(90% CI) ^b	(2,500 to 16,000)	(2,800 to 19,000)	(2,700 to 18,000)
Change ^c	-	1,000	640
(90% CI) ^b	-	(280 to 2,500)	(140 to 1,600)
% Change ^c	-	15	9
(90% CI) ^b	-	(11 , 15)	(5 , 10)

^aThe average of ten median estimates.^b90% CI denotes the 90% credible interval.^cChange relative to the proportional results.

TABLE A41 Risk Results for St Louis Children, Scenario 8HA3H-0.084

	Proportional	Weibull	Quadratic
Moderate/Severe Cough, Children, 1 Hr Exposures, Heavy Exertion			
Median ^a	1,500	2,100	1,700
(90% CI) ^b	(530 to 2,400)	(730 to 3,200)	(600 to 2,600)
Change ^c	-	560	190
(90% CI) ^b	-	(200 to 880)	(66 to 290)
% Change ^c	-	37	12
(90% CI) ^b	-	(37 , 37)	(12 , 12)
Moderate/Severe Chest Pain, Children, 1 Hr Exposures, Moderate Exertion			
Median ^a	1,100	940	980
(90% CI) ^b	(110 to 4,300)	(71 to 4,100)	(82 to 4,100)
Change ^c	-	-110	-78
(90% CI) ^b	-	(-35 to -150)	(-24 to -120)
% Change ^c	-	-11	-7
(90% CI) ^b	-	(-33 , -4)	(-23 , -3)
Moderate Lung Function Decrement ($\geq 15\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	8,000	9,200	8,400
(90% CI) ^b	(3,800 to 15,000)	(4,400 to 17,000)	(4,000 to 15,000)
Change ^c	-	1,200	400
(90% CI) ^b	-	(650 to 2,100)	(220 to 630)
% Change ^c	-	15	5
(90% CI) ^b	-	(17 , 14)	(6 , 4)
Large Lung Function Decrement ($\geq 20\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	2,500	3,000	2,700
(90% CI) ^b	(880 to 6,200)	(1,000 to 7,200)	(940 to 6,500)
Change ^c	-	480	170
(90% CI) ^b	-	(160 to 1,100)	(53 to 370)
% Change ^c	-	19	7
(90% CI) ^b	-	(19 , 17)	(6 , 6)

^aThe average of ten median estimates.^b90% CI denotes the 90% credible interval.^cChange relative to the proportional results.

TABLE A42 Risk Results for Washington, D.C. Children, Scenario 8HA3H-0.084

	Proportional	Weibull	Quadratic
Moderate/Severe Cough, Children, 1 Hr Exposures, Heavy Exertion			
Median ^a	2,600	3,500	2,900
(90% CI) ^b	(910 to 4,000)	(1,200 to 5,300)	(1,000 to 4,600)
Change ^c	-	870	360
(90% CI) ^b	-	(310 to 1,300)	(120 to 560)
% Change ^c	-	34	14
(90% CI) ^b	-	(34 , 33)	(14 , 14)
Moderate/Severe Chest Pain, Children, 1 Hr Exposures, Moderate Exertion			
Median ^a	1,900	1,700	1,800
(90% CI) ^b	(190 to 7,300)	(140 to 7,100)	(150 to 7,100)
Change ^c	-	-160	-140
(90% CI) ^b	-	(-53 to -180)	(-46 to -180)
% Change ^c	-	-8	-7
(90% CI) ^b	-	(-28 , -3)	(-24 , -2)
Moderate Lung Function Decrement ($\geq 15\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	15,000	17,000	16,000
(90% CI) ^b	(7,500 to 27,000)	(8,600 to 30,000)	(8,000 to 28,000)
Change ^c	-	2,000	820
(90% CI) ^b	-	(1,000 to 3,200)	(430 to 1,300)
% Change ^c	-	13	5
(90% CI) ^b	-	(14 , 12)	(6 , 5)
Large Lung Function Decrement ($\geq 20\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	5,300	6,100	5,600
(90% CI) ^b	(1,900 to 12,000)	(2,200 to 14,000)	(2,000 to 13,000)
Change ^c	-	820	340
(90% CI) ^b	-	(240 to 1,800)	(83 to 800)
% Change ^c	-	16	7
(90% CI) ^b	-	(12 , 15)	(4 , 7)

^aThe average of ten median estimates.^b90% CI denotes the 90% credible interval.^cChange relative to the proportional results.

TABLE A43 Risk Results for Houston Child-Occurrences, Scenario 8HA3H-0.084

	Proportional	Weibull	Quadratic
Moderate/Severe Cough, Children, 1 Hr Exposures, Heavy Exertion			
Median ^a	3,000	6,600	5,000
(90% CI) ^b	(1,000 to 4,700)	(2,200 to 10,000)	(1,700 to 7,800)
Change ^c	-	3,600	2,000
(90% CI) ^b	-	(1,100 to 5,700)	(630 to 3,200)
% Change ^c	-	119	66
(90% CI) ^b	-	(106 , 122)	(60 , 68)
Moderate/Severe Chest Pain, Children, 1 Hr Exposures, Moderate Exertion			
Median ^a	8,400	10,000	9,100
(90% CI) ^b	(1,000 to 62,000)	(530 to 120,000)	(400 to 98,000)
Change ^c	-	1,800	720
(90% CI) ^b	-	(-490 to 62,000)	(-610 to 36,000)
% Change ^c	-	22	9
(90% CI) ^b	-	(-48 , 101)	(-60 , 59)
Moderate Lung Function Decrement ($\geq 15\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	29,000	59,000	46,000
(90% CI) ^b	(11,000 to 61,000)	(20,000 to 140,000)	(16,000 to 100,000)
Change ^c	-	30,000	17,000
(90% CI) ^b	-	(8,100 to 74,000)	(4,100 to 42,000)
% Change ^c	-	104	57
(90% CI) ^b	-	(71 , 122)	(36 , 68)
Large Lung Function Decrement ($\geq 20\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	5,600	6,100	5,400
(90% CI) ^b	(2,100 to 18,000)	(2,100 to 32,000)	(1,800 to 26,000)
Change ^c	-	490	-210
(90% CI) ^b	-	(-50 to 14,000)	(-280 to 7,200)
% Change ^c	-	9	-4
(90% CI) ^b	-	(-2 , 75)	(-13 , 39)

^aThe average of ten median estimates.^b90% CI denotes the 90% credible interval.^cChange relative to the proportional results.

TABLE A44 Risk Results for Los Angeles Child-Occurrences, Scenario 8HA3H-0.084

	Proportional	Weibull	Quadratic
Moderate/Severe Cough, Children, 1 Hr Exposures, Heavy Exertion			
Median ^a	13,000	20,000	20,000
(90% CI) ^b	(4,500 to 20,000)	(6,700 to 31,000)	(7,000 to 31,000)
Change ^c	-	6,900	7,300
(90% CI) ^b	-	(2,200 to 11,000)	(2,400 to 12,000)
% Change ^c	-	54	57
(90% CI) ^b	-	(48 , 56)	(53 , 58)
Moderate/Severe Chest Pain, Children, 1 Hr Exposures, Moderate Exertion			
Median ^a	35,000	40,000	47,000
(90% CI) ^b	(2,700 to 260,000)	(2,100 to 390,000)	(2,100 to 410,000)
Change ^c	-	4,700	11,000
(90% CI) ^b	-	(-600 to 130,000)	(-580 to 150,000)
% Change ^c	-	13	32
(90% CI) ^b	-	(-22 , 49)	(-21 , 56)
Moderate Lung Function Decrement ($\geq 15\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	130,000	200,000	220,000
(90% CI) ^b	(47,000 to 270,000)	(72,000 to 450,000)	(82,000 to 480,000)
Change ^c	-	78,000	97,000
(90% CI) ^b	-	(25,000 to 180,000)	(35,000 to 210,000)
% Change ^c	-	62	77
(90% CI) ^b	-	(54 , 66)	(76 , 78)
Large Lung Function Decrement ($\geq 20\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	20,000	28,000	35,000
(90% CI) ^b	(7,000 to 77,000)	(9,300 to 120,000)	(12,000 to 140,000)
Change ^c	-	7,500	15,000
(90% CI) ^b	-	(2,300 to 42,000)	(4,900 to 59,000)
% Change ^c	-	37	73
(90% CI) ^b	-	(33 , 55)	(70 , 76)

^aThe average of ten median estimates.^b90% CI denotes the 90% credible interval.^cChange relative to the proportional results.

TABLE A45 Risk Results for New York Child-Occurrences, Scenario 8HA3H-0.084

	Proportional	Weibull	Quadratic
Moderate/Severe Cough, Children, 1 Hr Exposures, Heavy Exertion			
Median ^a	6,000	11,000	8,900
(90% CI) ^b	(2,000 to 9,300)	(3,600 to 17,000)	(3,000 to 14,000)
Change ^c	-	4,800	2,900
(90% CI) ^b	-	(1,500 to 7,700)	(960 to 4,600)
% Change ^c	-	81	49
(90% CI) ^b	-	(75 , 82)	(47 , 50)
Moderate/Severe Chest Pain, Children, 1 Hr Exposures, Moderate Exertion			
Median ^a	19,000	23,000	21,000
(90% CI) ^b	(1,000 to 160,000)	(740 to 270,000)	(690 to 230,000)
Change ^c	-	4,500	2,900
(90% CI) ^b	-	(-270 to 110,000)	(-320 to 64,000)
% Change ^c	-	24	16
(90% CI) ^b	-	(-27 , 65)	(-32 , 40)
Moderate Lung Function Decrement ($\geq 15\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	110,000	180,000	150,000
(90% CI) ^b	(39,000 to 230,000)	(62,000 to 410,000)	(54,000 to 340,000)
Change ^c	-	76,000	48,000
(90% CI) ^b	-	(23,000 to 180,000)	(15,000 to 110,000)
% Change ^c	-	71	45
(90% CI) ^b	-	(59 , 78)	(38 , 48)
Large Lung Function Decrement ($\geq 20\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	17,000	22,000	21,000
(90% CI) ^b	(5,600 to 65,000)	(7,100 to 100,000)	(6,700 to 90,000)
Change ^c	-	5,000	3,800
(90% CI) ^b	-	(1,400 to 39,000)	(1,100 to 25,000)
% Change ^c	-	30	22
(90% CI) ^b	-	(25 , 59)	(19 , 39)

^aThe average of ten median estimates.^b90% CI denotes the 90% credible interval.^cChange relative to the proportional results.

TABLE A46 Risk Results for Philadelphia Child-Occurrences, Scenario 8HA3H-0.084

	Proportional	Weibull	Quadratic
Moderate/Severe Cough, Children, 1 Hr Exposures, Heavy Exertion			
Median ^a	4,800	8,400	7,000
(90% CI) ^b	(1,600 to 7,400)	(2,800 to 13,000)	(2,400 to 11,000)
Change ^c	-	3,600	2,300
(90% CI) ^b	-	(1,200 to 5,700)	(760 to 3,600)
% Change ^c	-	76	48
(90% CI) ^b	-	(74 , 77)	(47 , 48)
Moderate/Severe Chest Pain, Children, 1 Hr Exposures, Moderate Exertion			
Median ^a	11,000	17,000	15,000
(90% CI) ^b	(490 to 110,000)	(440 to 190,000)	(420 to 160,000)
Change ^c	-	6,200	4,300
(90% CI) ^b	-	(-45 to 86,000)	(-66 to 54,000)
% Change ^c	-	56	39
(90% CI) ^b	-	(-9 , 80)	(-14 , 50)
Moderate Lung Function Decrement ($\geq 15\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	73,000	140,000	120,000
(90% CI) ^b	(26,000 to 160,000)	(47,000 to 320,000)	(40,000 to 260,000)
Change ^c	-	68,000	43,000
(90% CI) ^b	-	(21,000 to 160,000)	(14,000 to 10,000)
% Change ^c	-	93	59
(90% CI) ^b	-	(81 , 99)	(52 , 62)
Large Lung Function Decrement ($\geq 20\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	10,000	16,000	14,000
(90% CI) ^b	(3,500 to 43,000)	(5,000 to 79,000)	(4,500 to 66,000)
Change ^c	-	5,200	3,700
(90% CI) ^b	-	(1,400 to 36,000)	(1,000 to 23,000)
% Change ^c	-	49	35
(90% CI) ^b	-	(40 , 82)	(28 , 53)

^aThe average of ten median estimates.^b90% CI denotes the 90% credible interval.^cChange relative to the proportional results.

TABLE A47 Risk Results for St Louis Child-Occurrences, Scenario 8HA3H-0.084

	Proportional	Weibull	Quadratic
Moderate/Severe Cough, Children, 1 Hr Exposures, Heavy Exertion			
Median ^a	2,400	4,100	2,900
(90% CI) ^b	(800 to 3,700)	(1,400 to 6,400)	(980 to 4,500)
Change ^c	-	1,700	520
(90% CI) ^b	-	(560 to 2,700)	(180 to 820)
% Change ^c	-	71	22
(90% CI) ^b	-	(69 , 72)	(22 , 22)
Moderate/Severe Chest Pain, Children, 1 Hr Exposures, Moderate Exertion			
Median ^a	5,600	8,200	6,300
(90% CI) ^b	(240 to 55,000)	(230 to 94,000)	(230 to 66,000)
Change ^c	-	2,600	770
(90% CI) ^b	-	(-10 to 39,000)	(-16 to 11,000)
% Change ^c	-	47	14
(90% CI) ^b	-	(-4 , 71)	(-7 , 20)
Moderate Lung Function Decrement ($\geq 15\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	33,000	62,000	41,000
(90% CI) ^b	(11,000 to 74,000)	(21,000 to 140,000)	(14,000 to 92,000)
Change ^c	-	29,000	7,900
(90% CI) ^b	-	(9,100 to 66,000)	(2,600 to 18,000)
% Change ^c	-	87	24
(90% CI) ^b	-	(80 , 90)	(23 , 24)
Large Lung Function Decrement ($\geq 20\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	4,300	6,900	5,100
(90% CI) ^b	(1,400 to 19,000)	(2,200 to 35,000)	(1,600 to 24,000)
Change ^c	-	2,600	860
(90% CI) ^b	-	(760 to 15,000)	(250 to 4,400)
% Change ^c	-	61	20
(90% CI) ^b	-	(55 , 81)	(18 , 23)

^aThe average of ten median estimates.^b90% CI denotes the 90% credible interval.^cChange relative to the proportional results.

TABLE A48 Risk Results for Washington, D.C. Child-Occurrences, Scenario 8HA3H-0.084

	Proportional	Weibull	Quadratic
Moderate/Severe Cough, Children, 1 Hr Exposures, Heavy Exertion			
Median ^a	4,200	6,800	5,300
(90% CI) ^b	(1,400 to 6,600)	(2,300 to 11,000)	(1,800 to 8,300)
Change ^c	-	2,600	1,100
(90% CI) ^b	-	(870 to 4,100)	(360 to 1,700)
% Change ^c	-	62	25
(90% CI) ^b	-	(61 , 62)	(25 , 25)
Moderate/Severe Chest Pain, Children, 1 Hr Exposures, Moderate Exertion			
Median ^a	11,000	16,000	13,000
(90% CI) ^b	(450 to 100,000)	(440 to 170,000)	(420 to 130,000)
Change ^c	-	5,600	2,500
(90% CI) ^b	-	(-4 to 66,000)	(-24 to 28,000)
% Change ^c	-	53	24
(90% CI) ^b	-	(-1 , 65)	(-5 , 27)
Moderate Lung Function Decrement ($\geq 15\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	65,000	110,000	86,000
(90% CI) ^b	(23,000 to 140,000)	(39,000 to 260,000)	(30,000 to 190,000)
Change ^c	-	49,000	20,000
(90% CI) ^b	-	(16,000 to 110,000)	(6,900 to 46,000)
% Change ^c	-	76	31
(90% CI) ^b	-	(71 , 78)	(30 , 32)
Large Lung Function Decrement ($\geq 20\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	8,800	14,000	11,000
(90% CI) ^b	(3,000 to 38,000)	(4,500 to 66,000)	(3,700 to 50,000)
Change ^c	-	5,400	2,500
(90% CI) ^b	-	(1,500 to 28,000)	(710 to 12,000)
% Change ^c	-	61	28
(90% CI) ^b	-	(52 , 73)	(24 , 31)

^aThe average of ten median estimates.^b90% CI denotes the 90% credible interval.^cChange relative to the proportional results.

TABLE A49 Houston Children, Scenario 1H1EX-0.124

	Proportional	Weibull	Quadratic
Moderate/Severe Cough, Children, 1 Hr Exposures, Heavy Exertion			
Median ^a	1,300	3,400	3,000
(90% CI) ^b	(470 to 2,100)	(1,200 to 5,300)	(1,000 to 4,600)
Change ^c	-	2,100	1,600
(90% CI) ^b	-	(710 to 3,200)	(570 to 2,500)
% Change ^c	-	154	120
(90% CI) ^b	-	(150 , 155)	(119 , 120)
Moderate/Severe Chest Pain, Children, 1 Hr Exposures, Moderate Exertion			
Median ^a	1,700	2,000	2,100
(90% CI) ^b	(240 to 6,300)	(230 to 7,700)	(220 to 7,700)
Change ^c	-	380	400
(90% CI) ^b	-	(-8 to 1,400)	(-17 to 1,400)
% Change ^c	-	23	24
(90% CI) ^b	-	(-4 , 22)	(-7 , 22)
Moderate Lung Function Decrement ($\geq 15\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	8,000	14,000	14,000
(90% CI) ^b	(3,500 to 16,000)	(6,700 to 26,000)	(6,600 to 25,000)
Change ^c	-	6,100	5,700
(90% CI) ^b	-	(3,200 to 10,000)	(3,100 to 9,300)
% Change ^c	-	75	71
(90% CI) ^b	-	(90 , 64)	(88 , 59)
Large Lung Function Decrement ($\geq 20\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	2,000	4,400	4,400
(90% CI) ^b	(780 to 5,600)	(1,600 to 11,000)	(1,600 to 11,000)
Change ^c	-	2,400	2,400
(90% CI) ^b	-	(810 to 5,300)	(830 to 5,100)
% Change ^c	-	116	115
(90% CI) ^b	-	(103 , 94)	(106 , 90)

^aThe average of ten median estimates.^b90% CI denotes the 90% credible interval.^cChange relative to the proportional results.

TABLE A50 Los Angeles Children, Scenario 1H1EX-0.124

	Proportional	Weibull	Quadratic
Moderate/Severe Cough, Children, 1 Hr Exposures, Heavy Exertion			
Median ^a	5,800	12,000	13,000
(90% CI) ^b	(2,000 to 8,900)	(4,100 to 18,000)	(4,900 to 20,000)
Change ^c	-	5,900	7,300
(90% CI) ^b	-	(2,100 to 9,100)	(2,800 to 11,000)
% Change ^c	-	102	126
(90% CI) ^b	-	(102 , 102)	(138 , 122)
Moderate/Severe Chest Pain, Children, 1 Hr Exposures, Moderate Exertion			
Median ^a	4,300	5,300	6,600
(90% CI) ^b	(490 to 19,000)	(600 to 22,000)	(970 to 25,000)
Change ^c	-	1,000	2,400
(90% CI) ^b	-	(120 to 3,600)	(480 to 6,100)
% Change ^c	-	23	55
(90% CI) ^b	-	(24 , 20)	(99 , 33)
Moderate Lung Function Decrement ($\geq 15\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	19,000	41,000	49,000
(90% CI) ^b	(8,000 to 39,000)	(19,000 to 79,000)	(25,000 to 87,000)
Change ^c	-	22,000	30,000
(90% CI) ^b	-	(11,000 to 39,000)	(17,000 to 48,000)
% Change ^c	-	113	155
(90% CI) ^b	-	(135 , 100)	(213 , 122)
Large Lung Function Decrement ($\geq 20\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	4,400	12,000	17,000
(90% CI) ^b	(1,500 to 13,000)	(4,300 to 30,000)	(7,000 to 39,000)
Change ^c	-	7,300	13,000
(90% CI) ^b	-	(2,800 to 17,000)	(5,600 to 26,000)
% Change ^c	-	168	298
(90% CI) ^b	-	(191 , 129)	(379 , 192)

^aThe average of ten median estimates.^b90% CI denotes the 90% credible interval.^cChange relative to the proportional results.

TABLE A51 New York Children, Scenario 1H1EX-0.124

	Proportional	Weibull	Quadratic
Moderate/Severe Cough, Children, 1 Hr Exposures, Heavy Exertion			
Median ^a	5,900	11,000	8,000
(90% CI) ^b	(2,100 to 9,200)	(3,800 to 16,000)	(2,900 to 12,000)
Change ^c	-	4,700	2,100
(90% CI) ^b	-	(1,700 to 7,300)	(770 to 3,200)
% Change ^c	-	80	35
(90% CI) ^b	-	(80 , 80)	(36 , 35)
Moderate/Severe Chest Pain, Children, 1 Hr Exposures, Moderate Exertion			
Median ^a	6,900	8,000	7,600
(90% CI) ^b	(900 to 26,000)	(1,100 to 29,000)	(1,000 to 28,000)
Change ^c	-	1,200	730
(90% CI) ^b	-	(160 to 3,600)	(110 to 2,000)
% Change ^c	-	17	11
(90% CI) ^b	-	(17 , 14)	(12 , 8)
Moderate Lung Function Decrement ($\geq 15\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	47,000	66,000	58,000
(90% CI) ^b	(23,000 to 83,000)	(34,000 to 110,000)	(30,000 to 100,000)
Change ^c	-	19,000	11,000
(90% CI) ^b	-	(11,000 to 30,000)	(6,600 to 17,000)
% Change ^c	-	41	24
(90% CI) ^b	-	(47 , 36)	(29 , 21)
Large Lung Function Decrement ($\geq 20\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	16,000	24,000	21,000
(90% CI) ^b	(6,100 to 37,000)	(9,900 to 53,000)	(8,500 to 46,000)
Change ^c	-	8,400	5,200
(90% CI) ^b	-	(3,700 to 16,000)	(2,300 to 9,600)
% Change ^c	-	53	32
(90% CI) ^b	-	(61 , 44)	(38 , 26)

^aThe average of ten median estimates.^b90% CI denotes the 90% credible interval.^cChange relative to the proportional results.

TABLE A52 Philadelphia Children, Scenario 1H1EX-0.124

	Proportional	Weibull	Quadratic
Moderate/Severe Cough, Children, 1 Hr Exposures, Heavy Exertion			
Median ^a	4,900	7,300	5,900
(90% CI) ^b	(1,800 to 7,500)	(2,800 to 11,000)	(2,200 to 8,900)
Change ^c	-	2,300	960
(90% CI) ^b	-	(930 to 3,400)	(390 to 1,400)
% Change ^c	-	47	19
(90% CI) ^b	-	(51 , 45)	(21 , 19)
Moderate/Severe Chest Pain, Children, 1 Hr Exposures, Moderate Exertion			
Median ^a	4,700	5,400	5,000
(90% CI) ^b	(820 to 14,000)	(950 to 15,000)	(880 to 15,000)
Change ^c	-	680	330
(90% CI) ^b	-	(140 to 1,400)	(64 to 700)
% Change ^c	-	14	7
(90% CI) ^b	-	(17 , 10)	(8 , 5)
Moderate Lung Function Decrement ($\geq 15\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	33,000	42,000	37,000
(90% CI) ^b	(19,000 to 53,000)	(24,000 to 65,000)	(21,000 to 59,000)
Change ^c	-	8,400	4,100
(90% CI) ^b	-	(5,400 to 12,000)	(2,700 to 5,600)
% Change ^c	-	25	12
(90% CI) ^b	-	(29 , 22)	(14 , 11)
Large Lung Function Decrement ($\geq 20\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	14,000	19,000	17,000
(90% CI) ^b	(5,900 to 29,000)	(8,000 to 36,000)	(7,000 to 32,000)
Change ^c	-	4,500	2,300
(90% CI) ^b	-	(2,200 to 7,700)	(1,100 to 3,800)
% Change ^c	-	32	16
(90% CI) ^b	-	(37 , 27)	(19 , 13)

^aThe average of ten median estimates.^b90% CI denotes the 90% credible interval.^cChange relative to the proportional results.

TABLE A53 St Louis Children, Scenario 1H1EX-0.124

	Proportional	Weibull	Quadratic
Moderate/Severe Cough, Children, 1 Hr Exposures, Heavy Exertion			
Median ^a	2,200	3,300	2,300
(90% CI) ^b	(820 to 3,400)	(1,200 to 5,000)	(840 to 3,500)
Change ^c	-	1,100	48
(90% CI) ^b	-	(430 to 1,600)	(20 to 71)
% Change ^c	-	49	2
(90% CI) ^b	-	(53 , 48)	(2 , 2)
Moderate/Severe Chest Pain, Children, 1 Hr Exposures, Moderate Exertion			
Median ^a	1,800	2,100	1,800
(90% CI) ^b	(290 to 5,800)	(350 to 6,400)	(300 to 5,800)
Change ^c	-	290	22
(90% CI) ^b	-	(56 to 640)	(5 to 45)
% Change ^c	-	16	1
(90% CI) ^b	-	(19 , 11)	(2 , 1)
Moderate Lung Function Decrement ($\geq 15\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	12,000	17,000	13,000
(90% CI) ^b	(6,600 to 21,000)	(9,300 to 27,000)	(6,800 to 21,000)
Change ^c	-	4,300	260
(90% CI) ^b	-	(2,700 to 6,000)	(170 to 350)
% Change ^c	-	35	2
(90% CI) ^b	-	(41 , 29)	(3 , 2)
Large Lung Function Decrement ($\geq 20\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	4,900	7,200	5,000
(90% CI) ^b	(1,900 to 10,000)	(3,000 to 14,000)	(2,000 to 11,000)
Change ^c	-	2,300	140
(90% CI) ^b	-	(1,000 to 4,000)	(66 to 240)
% Change ^c	-	47	3
(90% CI) ^b	-	(51 , 39)	(3 , 2)

^aThe average of ten median estimates.^b90% CI denotes the 90% credible interval.^cChange relative to the proportional results.

TABLE A54 Washington, D.C. Children, Scenario 1H1EX-0.124

	Proportional	Weibull	Quadratic
Moderate/Severe Cough, Children, 1 Hr Exposures, Heavy Exertion			
Median ^a	3,800	5,400	4,100
(90% CI) ^b	(1,400 to 5,800)	(2,100 to 8,200)	(1,500 to 6,200)
Change ^c	-	1,600	260
(90% CI) ^b	-	(640 to 2,300)	(110 to 380)
% Change ^c	-	41	7
(90% CI) ^b	-	(45 , 40)	(8 , 7)
Moderate/Severe Chest Pain, Children, 1 Hr Exposures, Moderate Exertion			
Median ^a	3,400	3,700	3,400
(90% CI) ^b	(580 to 10,000)	(650 to 11,000)	(590 to 10,000)
Change ^c	-	350	68
(90% CI) ^b	-	(76 to 730)	(14 to 140)
% Change ^c	-	11	2
(90% CI) ^b	-	(13 , 7)	(2 , 1)
Moderate Lung Function Decrement ($\geq 15\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	24,000	29,000	25,000
(90% CI) ^b	(13,000 to 39,000)	(17,000 to 46,000)	(14,000 to 40,000)
Change ^c	-	5,400	1,100
(90% CI) ^b	-	(3,500 to 7,600)	(690 to 1,600)
% Change ^c	-	23	5
(90% CI) ^b	-	(26 , 20)	(5 , 4)
Large Lung Function Decrement ($\geq 20\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	10,000	13,000	11,000
(90% CI) ^b	(4,200 to 21,000)	(5,600 to 26,000)	(4,500 to 22,000)
Change ^c	-	2,900	570
(90% CI) ^b	-	(1,400 to 4,900)	(260 to 1,000)
% Change ^c	-	28	6
(90% CI) ^b	-	(33 , 24)	(6 , 5)

^aThe average of ten median estimates.^b90% CI denotes the 90% credible interval.^cChange relative to the proportional results.

TABLE A55 Houston Child-occurrences, Scenario 1H1EX-0.124

	Proportional	Weibull	Quadratic
Moderate/Severe Cough, Children, 1 Hr Exposures, Heavy Exertion			
Median ^a	1,700	7,700	5,200
(90% CI) ^b	(600 to 2,700)	(2,500 to 12,000)	(1,800 to 8,200)
Change ^c	-	5,900	3,500
(90% CI) ^b	-	(1,900 to 9,400)	(1,200 to 5,500)
% Change ^c	-	342	202
(90% CI) ^b	-	(317 , 350)	(194 , 205)
Moderate/Severe Chest Pain, Children, 1 Hr Exposures, Moderate Exertion			
Median ^a	3,900	11,000	10,000
(90% CI) ^b	(360 to 33,000)	(460 to 150,000)	(500 to 100,000)
Change ^c	-	7,300	6,300
(90% CI) ^b	-	(100 to 110,000)	(140 to 70,000)
% Change ^c	-	189	161
(90% CI) ^b	-	(29 , 338)	(38 , 210)
Moderate Lung Function Decrement ($\geq 15\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	13,000	71,000	49,000
(90% CI) ^b	(4,900 to 28,000)	(23,000 to 160,000)	(17,000 to 110,000)
Change ^c	-	58,000	36,000
(90% CI) ^b	-	(18,000 to 140,000)	(12,000 to 82,000)
% Change ^c	-	437	273
(90% CI) ^b	-	(358 , 479)	(242 , 290)
Large Lung Function Decrement ($\geq 20\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	2,200	6,400	6,100
(90% CI) ^b	(830 to 8,000)	(2,100 to 38,000)	(2,100 to 28,000)
Change ^c	-	4,100	3,900
(90% CI) ^b	-	(1,300 to 30,000)	(1,300 to 20,000)
% Change ^c	-	185	176
(90% CI) ^b	-	(151 , 369)	(152 , 249)

^aThe average of ten median estimates.^b90% CI denotes the 90% credible interval.^cChange relative to the proportional results.

TABLE A56 Los Angeles Child-occurrences, Scenario 1H1EX-0.124

	Proportional	Weibull	Quadratic
Moderate/Severe Cough, Children, 1 Hr Exposures, Heavy Exertion			
Median ^a	8,600	25,000	27,000
(90% CI) ^b	(3,000 to 13,000)	(8,500 to 40,000)	(9,700 to 42,000)
Change ^c	-	17,000	19,000
(90% CI) ^b	-	(5,500 to 26,000)	(6,700 to 29,000)
% Change ^c	-	194	217
(90% CI) ^b	-	(187 , 196)	(227 , 214)
Moderate/Severe Chest Pain, Children, 1 Hr Exposures, Moderate Exertion			
Median ^a	18,000	47,000	79,000
(90% CI) ^b	(990 to 170,000)	(2,100 to 500,000)	(5,500 to 570,000)
Change ^c	-	28,000	61,000
(90% CI) ^b	-	(1,200 to 330,000)	(4,500 to 400,000)
% Change ^c	-	154	329
(90% CI) ^b	-	(116 , 199)	(456 , 241)
Moderate Lung Function Decrement ($\geq 15\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	68,000	270,000	340,000
(90% CI) ^b	(22,000 to 160,000)	(91,000 to 600,000)	(140,000 to 710,000)
Change ^c	-	200,000	280,000
(90% CI) ^b	-	(68,000 to 440,000)	(120,000 to 560,000)
% Change ^c	-	292	407
(90% CI) ^b	-	(308 , 285)	(518 , 359)
Large Lung Function Decrement ($\geq 20\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	6,900	32,000	70,000
(90% CI) ^b	(2,200 to 37,000)	(10,000 to 150,000)	(25,000 to 220,000)
Change ^c	-	25,000	63,000
(90% CI) ^b	-	(8,300 to 110,000)	(23,000 to 190,000)
% Change ^c	-	365	920
(90% CI) ^b	-	(383 , 306)	(1074 , 503)

^aThe average of ten median estimates.^b90% CI denotes the 90% credible interval.^cChange relative to the proportional results.

TABLE A57 New York Child-occurrences, Scenario 1H1EX-0.124

	Proportional	Weibull	Quadratic
Moderate/Severe Cough, Children, 1 Hr Exposures, Heavy Exertion			
Median ^a	7,900	18,000	12,000
(90% CI) ^b	(2,800 to 12,000)	(6,300 to 29,000)	(4,200 to 19,000)
Change ^c	-	10,000	4,200
(90% CI) ^b	-	(3,500 to 16,000)	(1,500 to 6,500)
% Change ^c	-	132	53
(90% CI) ^b	-	(128 , 133)	(53 , 53)
Moderate/Severe Chest Pain, Children, 1 Hr Exposures, Moderate Exertion			
Median ^a	28,000	57,000	43,000
(90% CI) ^b	(2,000 to 220,000)	(3,300 to 470,000)	(2,800 to 320,000)
Change ^c	-	29,000	15,000
(90% CI) ^b	-	(1,400 to 260,000)	(860 to 100,000)
% Change ^c	-	101	51
(90% CI) ^b	-	(69 , 119)	(44 , 49)
Moderate Lung Function Decrement ($\geq 15\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	150,000	360,000	250,000
(90% CI) ^b	(61,000 to 320,000)	(140,000 to 760,000)	(99,000 to 500,000)
Change ^c	-	210,000	91,000
(90% CI) ^b	-	(80,000 to 440,000)	(38,000 to 180,000)
% Change ^c	-	134	59
(90% CI) ^b	-	(133 , 136)	(63 , 57)
Large Lung Function Decrement ($\geq 20\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	30,000	69,000	52,000
(90% CI) ^b	(11,000 to 100,000)	(25,000 to 230,000)	(19,000 to 160,000)
Change ^c	-	39,000	21,000
(90% CI) ^b	-	(14,000 to 130,000)	(8,000 to 62,000)
% Change ^c	-	128	71
(90% CI) ^b	-	(132 , 132)	(75 , 62)

^aThe average of ten median estimates.^b90% CI denotes the 90% credible interval.^cChange relative to the proportional results.

TABLE A58 Philadelphia Child-occurrences, Scenario 1H1EX-0.124

	Proportional	Weibull	Quadratic
Moderate/Severe Cough, Children, 1 Hr Exposures, Heavy Exertion			
Median ^a	8,100	14,000	10,000
(90% CI) ^b	(2,900 to 13,000)	(5,100 to 22,000)	(3,700 to 16,000)
Change ^c	-	6,000	2,200
(90% CI) ^b	-	(2,200 to 9,200)	(820 to 3,400)
% Change ^c	-	74	27
(90% CI) ^b	-	(77 , 74)	(28 , 27)
Moderate/Severe Chest Pain, Children, 1 Hr Exposures, Moderate Exertion			
Median ^a	28,000	53,000	37,000
(90% CI) ^b	(2,100 to 200,000)	(3,500 to 360,000)	(2,700 to 250,000)
Change ^c	-	26,000	9,600
(90% CI) ^b	-	(1,400 to 160,000)	(620 to 56,000)
% Change ^c	-	93	35
(90% CI) ^b	-	(70 , 83)	(30 , 29)
Moderate Lung Function Decrement ($\geq 15\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	150,000	300,000	210,000
(90% CI) ^b	(62,000 to 320,000)	(130,000 to 600,000)	(85,000 to 420,000)
Change ^c	-	150,000	51,000
(90% CI) ^b	-	(64,000 to 280,000)	(23,000 to 99,000)
% Change ^c	-	94	33
(90% CI) ^b	-	(102 , 89)	(36 , 31)
Large Lung Function Decrement ($\geq 20\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	33,000	71,000	46,000
(90% CI) ^b	(12,000 to 100,000)	(26,000 to 210,000)	(17,000 to 140,000)
Change ^c	-	39,000	14,000
(90% CI) ^b	-	(14,000 to 100,000)	(5,100 to 36,000)
% Change ^c	-	118	41
(90% CI) ^b	-	(117 , 103)	(42 , 36)

^aThe average of ten median estimates.^b90% CI denotes the 90% credible interval.^cChange relative to the proportional results.

TABLE A59 St Louis Child-occurrences, Scenario 1H1EX-0.124

	Proportional	Weibull	Quadratic
Moderate/Severe Cough, Children, 1 Hr Exposures, Heavy Exertion			
Median ^a	3,800	6,800	3,900
(90% CI) ^b	(1,300 to 5,800)	(2,400 to 11,000)	(1,400 to 6,100)
Change ^c	-	3,100	130
(90% CI) ^b	-	(1,100 to 4,700)	(47 to 210)
% Change ^c	-	81	4
(90% CI) ^b	-	(83 , 81)	(4 , 4)
Moderate/Severe Chest Pain, Children, 1 Hr Exposures, Moderate Exertion			
Median ^a	12,000	23,000	13,000
(90% CI) ^b	(840 to 92,000)	(1,400 to 170,000)	(870 to 95,000)
Change ^c	-	11,000	430
(90% CI) ^b	-	(620 to 77,000)	(35 to 3,200)
% Change ^c	-	92	4
(90% CI) ^b	-	(74 , 84)	(4 , 3)
Moderate Lung Function Decrement ($\geq 15\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	63,000	130,000	66,000
(90% CI) ^b	(25,000 to 130,000)	(52,000 to 270,000)	(26,000 to 140,000)
Change ^c	-	66,000	2,800
(90% CI) ^b	-	(27,000 to 130,000)	(1,200 to 5,500)
% Change ^c	-	104	4
(90% CI) ^b	-	(110 , 101)	(5 , 4)
Large Lung Function Decrement ($\geq 20\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	12,000	27,000	13,000
(90% CI) ^b	(4,400 to 41,000)	(9,800 to 86,000)	(4,700 to 43,000)
Change ^c	-	15,000	740
(90% CI) ^b	-	(5,400 to 45,000)	(290 to 2,000)
% Change ^c	-	120	6
(90% CI) ^b	-	(123 , 109)	(7 , 5)

^aThe average of ten median estimates.^b90% CI denotes the 90% credible interval.^cChange relative to the proportional results.

TABLE A60 Washington, D.C. Child-occurrences, Scenario 1H1EX-0.124

	Proportional	Weibull	Quadratic
Moderate/Severe Cough, Children, 1 Hr Exposures, Heavy Exertion			
Median ^a	6,800	11,000	7,500
(90% CI) ^b	(2,400 to 11,000)	(4,000 to 17,000)	(2,700 to 12,000)
Change ^c	-	4,300	660
(90% CI) ^b	-	(1,600 to 6,500)	(250 to 1,000)
% Change ^c	-	63	10
(90% CI) ^b	-	(65 , 62)	(10 , 9)
Moderate/Severe Chest Pain, Children, 1 Hr Exposures, Moderate Exertion			
Median ^a	25,000	44,000	28,000
(90% CI) ^b	(1,700 to 170,000)	(2,800 to 280,000)	(1,900 to 190,000)
Change ^c	-	19,000	3,100
(90% CI) ^b	-	(1,100 to 110,000)	(210 to 17,000)
% Change ^c	-	76	13
(90% CI) ^b	-	(65 , 65)	(12 , 10)
Moderate Lung Function Decrement ($\geq 15\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	130,000	230,000	140,000
(90% CI) ^b	(52,000 to 260,000)	(97,000 to 450,000)	(59,000 to 290,000)
Change ^c	-	99,000	16,000
(90% CI) ^b	-	(45,000 to 190,000)	(7,200 to 30,000)
% Change ^c	-	78	12
(90% CI) ^b	-	(88 , 72)	(14 , 11)
Large Lung Function Decrement ($\geq 20\%$ FEV1 change), Children, 8 Hr Exposures, Moderate Exertion			
Median ^a	27,000	56,000	32,000
(90% CI) ^b	(9,800 to 84,000)	(20,000 to 160,000)	(11,000 to 96,000)
Change ^c	-	29,000	4,600
(90% CI) ^b	-	(10,000 to 73,000)	(1,700 to 12,000)
% Change ^c	-	105	17
(90% CI) ^b	-	(107 , 87)	(17 , 14)

^aThe average of ten median estimates.^b90% CI denotes the 90% credible interval.^cChange relative to the proportional results.