ETBE is metabolized to *tert*-butyl alcohol (*tert*-butanol) and acetaldehyde. Some of the toxicological effects observed following ETBE exposure such as increased kidney weight, increased urothelial hyperplasia (synonymous with transitional epithelial hyperplasia), and increased chronic progressive nephropathy (CPN) are attributed to *tert*-butanol as they were also observed following *tert*-butanol exposure (Salazar et al., 2015); therefore, the rodent bioassays from ETBE could provide supplementary information to the assessment of *tert*-butanol kidney toxicity and carcinogenicity. In addition to these effects, oral or inhalation ETBE exposure also elevated urine and serum biomarkers. No significant increases in renal tumors were observed in 2-year bioassays. Kidney effects were not observed in the one subchronic mouse study of inhalation ETBE exposure.

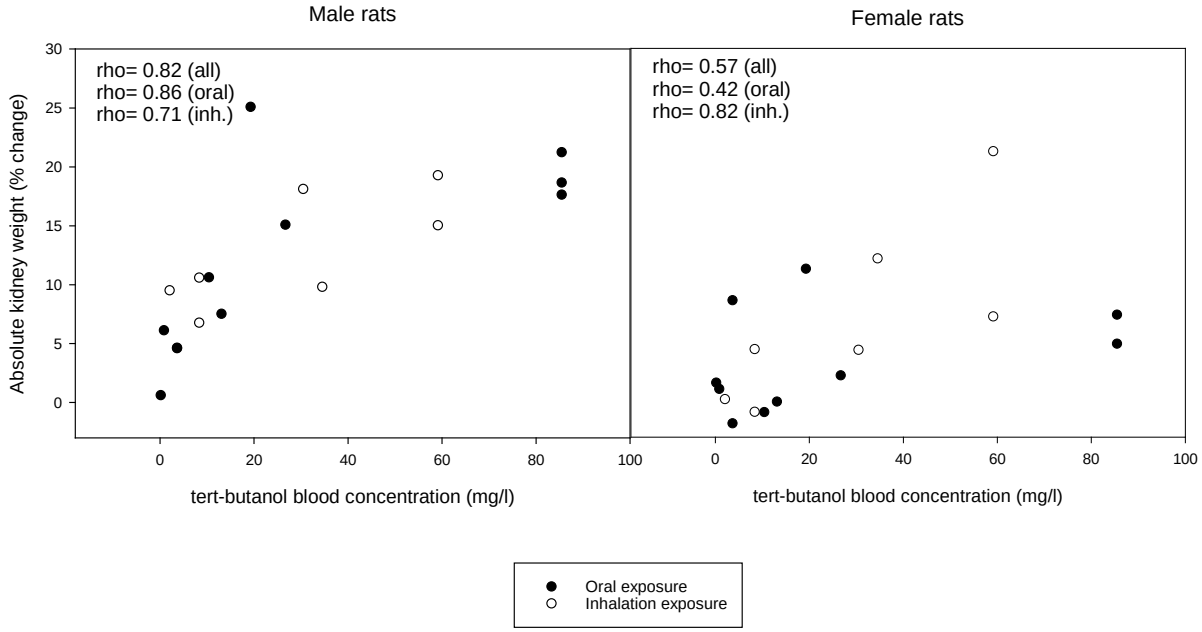


Figure 1. Comparison of absolute kidney weight change in male and female rats across oral and inhalation exposure on the basis of internal blood *tert*-butanol concentration. Spearman rank coefficient was calculated to evaluate the direction of a monotonic association and the strength of association.

Figure 2. Comparison of absolute kidney weight change in male and female mice following inhalation exposure on the basis of administered ETBE concentration.

Table 1. Evidence pertaining to kidney CPN and histopathological effects in animals exposed to ETBE

Reference and study design	Results (incidence, number/severity, or percent change compared to control)
Cohen et al. (2011) rat, F344/DuCrlCrlj oral - water male (50/group): 0, 625, 2,500, 10,000 ppm (0, 28, 121, 542 mg/kg-d)[a]; female (50/group): 0, 625, 2,500, 10,000 ppm (0, 46, 171, 560 mg/kg-d)[a] reanalysis of the histopathology from JPEC (2010a) study where animals were dosed daily for 104 wks	**Male** Dose (mg/kg-d) / Average severity of CPN / Incidence of CPN 0 / 2.08 / 49/50 28 / - / - 121 / - / - 542 / 2.72* / 50/50 **Female** Dose (mg/kg-d) / Average severity of CPN / Incidence of CPN 0 / 1.14 / 45/50 46 / 0.98 / 41/50 171 / 1.2 / 46/50 560 / 1.36 / 46/50
Cohen et al. (2011) rat, F344/DuCrlCrlj oral - water male (10/group): 0, 250, 1,600, 4,000, 10,000 ppm (0, 17, 40, 101, 259, 626 mg/kg-d)[a] reanalysis of the histopathology from JPEC 2006 (study No. 0665) study where animals were dosed daily for 13 wks	**Male** Dose (mg/kg-d) / Number of CPN foci/rat / Number of granular casts/rat 0 / 1.2 / 0 17 / - / - 40 / - / - 101 / - / - 259 / - / - 626 / 27.2 / 8.2
Miyata et al. (2013); JPEC (2008b) rat, CRL:CD(SD) oral - gavage male (15/group): 0, 5, 25, 100, 400 mg/kg-d; female (15/group): 0, 5, 25, 100, 400 mg/kg-d daily for 180 d	**Male** Dose (mg/kg-d) / Incidence of papillary mineralization 0 / 0/15 5 / 0/15 25 / 0/15 100 / 1/15 400 / 0/15 **Female** Dose (mg/kg-d) / Incidence of papillary mineralization 0 / 0/15 5 / - 25 / - 100 / - 400 / 0/15

Reference and study design	Results (incidence, number/severity, or percent change compared to control)
Saito et al. (2013); JPEC (2010b) rat, Fischer 344 inhalation - vapor male (50/group): 0, 500, 1,500, 5,000 ppm (0, 2,090, 6,270, 20,900 mg/m^3)[b]; female (50/group): 0, 500, 1,500, 5,000 ppm (0, 2,090, 6,270, 20,900 mg/m^3)[b] dynamic whole body inhalation; 6 hrs/d, 5 d/wk for 104 wks; generation method, analytical concentration and method were reported	**Male** Dose (mg/m^3) / Average severity of CPN as calculated by EPA[c] / Incidence of CPN / Incidence of papillary mineralization / Incidence of urothelial hyperplasia of the renal pelvis 0 / 2.4 / 49/50 / 0/50 / 2/50 2,090 / 2.6 / 50/50 / 0/50 / 5/50 6,270 / 2.7 / 49/49 / 1/49 / 16/49* 20,900 / 3.1* / 50/50 / 6/50* / 41/50* **Female** Dose (mg/m^3) / Average severity of CPN as calculated by EPA[c] / Incidence of CPN 0 / 0.9 / 32/50 2,090 / 1.3 / 38/50 6,270 / 1.3 / 41/50 20,900 / 1.6* / 40/50 Atypical tubule hyperplasia not observed in males or females. Papillary mineralization and urothelial hyperplasia of the renal pelvis not observed in females.
Suzuki et al. (2012); JPEC (2010a) rat, Fischer 344 oral - water male (50/group): 0, 625, 2,500, 10,000 ppm (0, 28, 121, 542 mg/kg-d)[a]; female (50/group): 0, 625, 2,500, 10,000 ppm (0, 46, 171, 560 mg/kg-d)[a] daily for 104 wks	**Male** Dose (mg/kg-d) / Average severity of CPN / Average severity of CPN as calculated by EPA[c] / Incidence of atypical tubule hyperplasia / Incidence of CPN 0 / 2.1 / 2.1 / 0/50 / 49/50 28 / 2.0 / 1.7 / 0/50 / 43/50 121 / 2.0 / 1.8 / 0/50 / 45/50 542 / 2.4* / 2.3 / 1/50 / 48/50 Dose (mg/kg-d) / Incidence of papillary necrosis / Incidence of papillary mineralization / Incidence of urothelial hyperplasia of the renal pelvis 0 / 0/50 / 0/50 / 0/50 28 / 1/50 / 0/50 / 0/50 121 / 0/50 / 16/50* / 10/50* 542 / 2/50 / 42/50* / 25/50* **Female** Dose (mg/kg-d) / Average severity of CPN / Average severity of CPN as calculated by EPA[c] / Incidence of atypical tubule hyperplasia / Incidence of CPN 0 / 1.2 / 1.0 / 0/50 / 41/50 46 / 1.2 / 0.9 / 0/50 / 37/50 171 / 1.5 / 1.1 / 0/50 / 37/50 560 / 1.5* / 1.2 / 2/50 / 39/50

Reference and study design	Results (incidence, number/severity, or percent change compared to control)			
	Dose (mg/kg-d)	Incidence of papillary necrosis	Incidence of papillary mineralization	Incidence of urothelial hyperplasia of the renal pelvis
	0	0/50	0/50	0/50
	46	1/50	0/50	0/50
	171	1/50	1/50	0/50
	560	2/50	3/50	0/50

[a]Conversion performed by study authors.
[b]4.18 mg/m^3 = 1 ppm.
[c]Average severity calculated as (grade × number of affected animals) ÷ total number of animals exposed.
*: result is statistically significant ($p < 0.05$) based on analysis of data by study authors.
-: for controls, no response relevant; for other doses, no quantitative response reported.
Percent change compared to controls calculated as 100 × ((treated value – control value) ÷ control value).

Table 2. Evidence pertaining to kidney biochemistry effects in animals exposed to ETBE

Reference and study design	Results (incidence, severity, or percent change compared to control)			
JPEC (2008a) rat, CRL:CD(SD) inhalation - vapor male (10/group): 0, 150, 500, 1,500, 5,000 ppm (0, 627, 2,090, 6,270, 20,900 mg/m^3)[a]; female (10/group): 0, 150, 500, 1,500, 5,000 ppm (0, 627, 2,090, 6,270, 20,900 mg/m^3)[a] dynamic whole body chamber; 6 hrs/d, 5 d/wk for 13 wks; generation method, analytical concentration, and method were reported	**Male**			
	Dose (mg/m^3)	Blood urea nitrogen (BUN)	Cholesterol	Creatinine
	0	-	-	-
	627	-9%	8%	-13%
	2,090	-5%	9%	-6%
	6,270	4%	26%	-6%
	20,900	4%	15%	-3%
	Dose (mg/m^3)	Proteinuria severity[b]	Proteinuria incidence	Urinary casts
	0	0.5	3/6	0/6
	627	1.2	5/6	0/6
	2,090	1.2	5/6	0/6
	6,270	1.3	6/6	0/6
	20,900	1.0	4/6	0/6
	Female			
	Dose (mg/m^3)	Blood urea nitrogen (BUN)	Cholesterol	Creatinine
	0	-	-	-
	627	-5%	7%	0%
	2,090	3%	9%	3%
	6,270	-8%	11%	-9%
	20,900	-4%	21%	-9%
	Dose (mg/m^3)	Proteinuria severity[b]	Proteinuria incidence	Urinary casts
	0	0.2	1/6	0/6
	627	0.3	1/6	0/6
	2,090	0.2	1/6	0/6
	6,270	0.5	2/6	0/6
	20,900	0.3	2/6	0/6

Reference and study design	Results (incidence, severity, or percent change compared to control)			
Miyata et al. (2013); JPEC (2008b) rat, CRL:CD(SD) oral - gavage male (15/group): 0, 5, 25, 100, 400 mg/kg-d; female (15/group): 0, 5, 25, 100, 400 mg/kg-d daily for approximately 26 wks	**Male**			
	Dose (mg/kg-d)	Blood urea nitrogen (BUN)	Cholesterol	Creatinine
	0	-	-	-
	5	12%	-5%	0%
	25	1%	21%	-10%
	100	4%	12%	-3%
	400	8%	53%*	0%
	Dose (mg/kg-d)	Proteinuria incidence	Proteinuria severity[b]	Urinary casts
	0	10/10	1.5	0/10
	5	10/10	1.6	-
	25	10/10	1.6	-
	100	10/10	1.3	-
	400	10/10	1.5	0/10
	Female			
	Dose (mg/kg-d)	Blood urea nitrogen (BUN)	Cholesterol	Creatinine
	0	-	-	-
	5	-5%	-7%	-19%
	25	-7%	-7%	-12%
	100	-1%	-2%	-16%
	400	4%	3%	-16%
	Dose (mg/kg-d)	Proteinuria incidence	Proteinuria severity[b]	Urinary casts
	0	8/10	1.2	0/10
	5	9/10	1.3	-
	25	7/10	1.0	-
	100	9/10	1.3	-
	400	7/10	1.0	0/10

Reference and study design	Results (incidence, severity, or percent change compared to control)
Saito et al. (2013); JPEC (2010b) rat, Fischer 344 inhalation - vapor male (50/group): 0, 500, 1,500, 5,000 ppm (0, 2,090, 6,270, 20,900 mg/m^3)[a]; female (50/group): 0, 500, 1,500, 5,000 ppm (0, 2,090, 6,270, 20,900 mg/m^3)[a] dynamic whole body inhalation; 6 hrs/d, 5 d/wk for 104 wks; generation method, analytical concentration and method were reported	**Male** Dose (mg/m^3) / Blood urea nitrogen (BUN) / Cholesterol / Creatinine / Proteinuria incidence / Proteinuria severity[b] 0 / - / - / - / 44/44 / 3.7 2,090 / 41%* / 10% / 14%* / 38/38 / 3.5 6,270 / 45%* / 29%* / 29%* / 40/40 / 3.6 20,900 / 179%* / 52%* / 71%* / 31/31 / 3.6 **Female** Dose (mg/m^3) / Blood urea nitrogen (BUN) / Cholesterol / Creatinine / Proteinuria incidence / Proteinuria severity[b] 0 / - / - / - / 33/38 / 2.8 2,090 / 10% / -3% / 0% / 39/39 / 3.1 6,270 / 4% / -4% / 0% / 30/30 / 3.3 20,900 / 30%* / 53%* / 0% / 30/30 / 3.4*
Suzuki et al. (2012); JPEC (2010a) rat, Fischer 344 oral - water male (50/group): 0, 625, 2,500, 10,000 ppm (0, 28, 121, 542 mg/kg-d)[c]; female (50/group): 0, 625, 2,500, 10,000 ppm (0, 46, 171, 560 mg/kg-d)[c] daily for 104 wks	**Male** Dose (mg/kg-d) / Blood urea nitrogen (BUN) / Cholesterol / Creatinine / Proteinuria incidence / Proteinuria severity[b] 0 / - / - / - / 39/39 / 3.0 28 / 3% / -11% / 0% / 37/37 / 3.1 121 / 20%* / 10% / 17% / 34/34 / 3.1 542 / 43%* / 31%* / 17% / 35/35 / 3.1 **Female** Dose (mg/kg-d) / Blood urea nitrogen (BUN) / Cholesterol / Creatinine / Proteinuria incidence / Proteinuria severity[b] 0 / - / - / - / 37/37 / 2.8 46 / -8% / -2% / 0% / 37/37 / 3.0 171 / -5% / 12% / -17% / 38/38 / 3.0 560 / -5% / 8% / 0% / 38/38 / 3.1

[a]4.18 mg/m^3 = 1 ppm.
[b]Severity of proteinuria = (1 × number of animals with "1+") + (2 × number of animals with "2+") + (3 × number of animals with "3+") + (4 × number of animals with "4+") ÷ total number of animals in group.
[c]Conversion performed by study authors.
*: result is statistically significant ($p < 0.05$) based on analysis of data by study authors.
-: for controls, no response relevant; for other doses, no quantitative response reported.
Percent change compared to controls calculated as 100 × ((treated value – control value) ÷ control value).

Table 3. Evidence pertaining to kidney tumor effects in animals exposed to ETBE

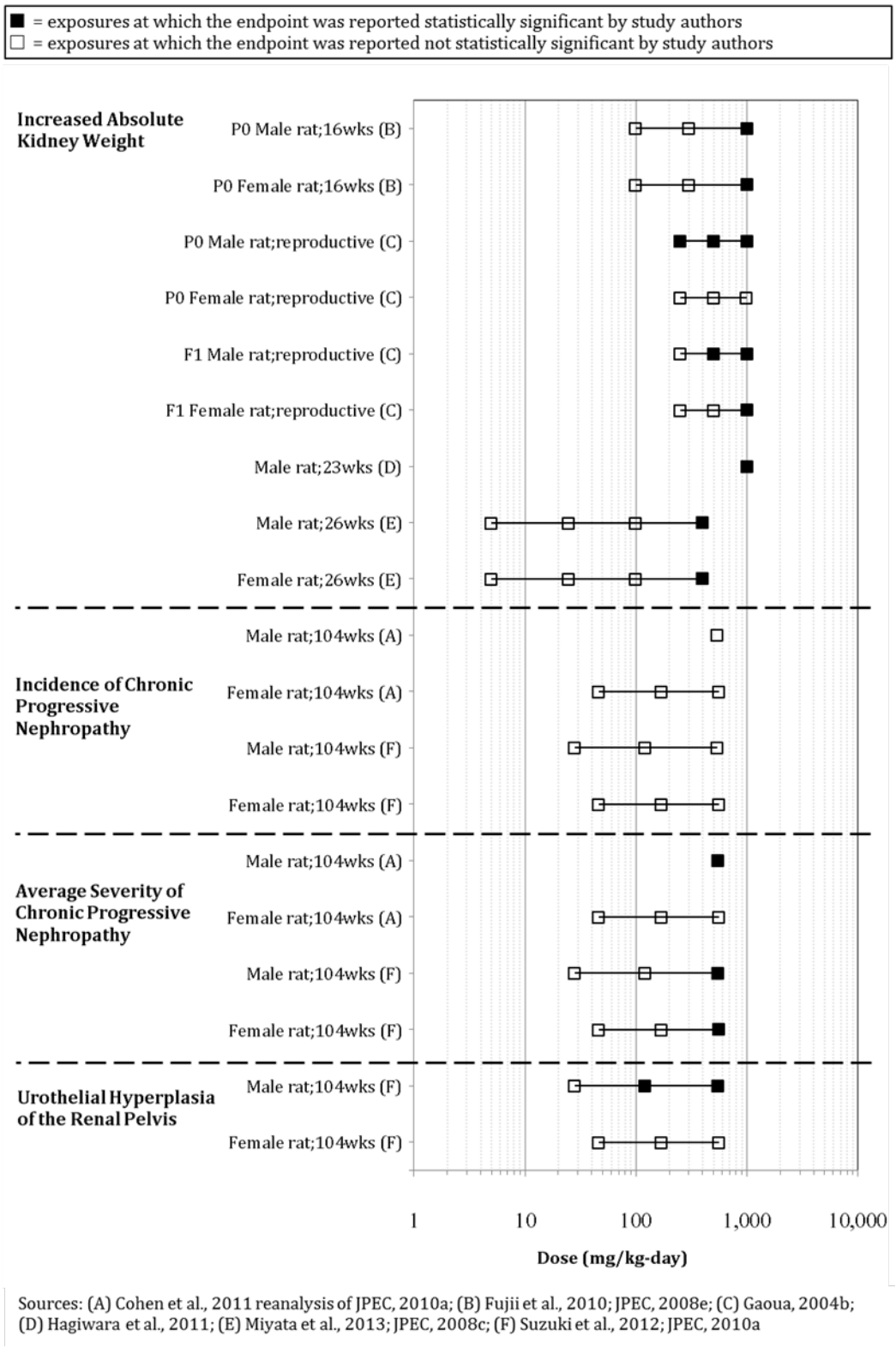
Reference and study design	Results (incidence)			
Hagiwara et al. (2011); JPEC (2008c) rat, Fischer 344 oral - gavage male (12/group): 0, 1,000 mg/kg-d daily for 23 wks	**Male** Dose (mg/kg-d) 0 1,000	 Renal transitional cell carcinoma 0/12 0/12	 Renal tubular adenoma or carcinoma 0/12 0/12	
Hagiwara et al. (2011); JPEC (2008c) rat, Fischer 344 oral - gavage male (30/group): 0, 300, 1,000 mg/kg-d daily for 23 wks following a 4 week tumor initiation by DMBDD[a]	**Male** Dose (mg/kg-d) 0 300 1,000	 Renal tubular adenoma or carcinoma 11/30 6/30 13/30	 Renal transitional cell carcinoma 1/30 0/30 2/30	
Hagiwara et al. (2015) rat, Wistar oral - gavage male (30/group): 0,100, 300, 500, 1,000 mg/kg-d daily for 23 wks following a 4 week tumor initiation by *N*-Ethyl-*N*-hydroxyethylnitrosamine (EHEN)	**Male** Dose (mg/kg-d) 0 100 300 500 1,000	 Renal tubular adenoma or carcinoma[b] 18/30 23/30 25/30 26/30 26/30		
Saito et al. (2013); JPEC (2010b) rat, Fischer 344 inhalation - vapor male (50/group): 0, 500, 1,500, 5,000 ppm (0, 2,090, 6,270, 20,900 mg/m^3)[c]; female (50/group): 0, 500, 1,500, 5,000 ppm (0, 2,090, 6,270, 20,900 mg/m^3)[c]	**Male** Dose (mg/m^3) 0 2,090 6,270 20,900	 Renal cell carcinoma 0/50 1/50 0/49 0/50	**Female** Dose (mg/m^3) 0 2,090 6,270 20,900	 Renal cell carcinoma 0/50 0/50 0/50 0/50
Suzuki et al. (2012); JPEC (2010a) rat, Fischer 344 oral - water male (50/group): 0, 625, 2,500, 10,000 ppm (0, 28, 121, 542 mg/kg-d)[d]; female (50/group): 0, 625, 2,500, 10,000 ppm (0, 46, 171, 560 mg/kg-d)[d] daily for 104 wks	**Male** Dose (mg/kg-d) 0 28 121 542	 Renal cell carcinoma 0/50 0/50 0/50 1/50	**Female** Dose (mg/kg-d) 0 46 171 560	 Renal cell carcinoma 0/50 0/50 0/50 1/50

[a]Diethylnitrosamine (DEN), N-butyl-N-(4-hydroxybutyl)nitrosamine (BBN), N-methyl-N-nitrosourea (MNU), 1,2-dimethylhydrazine dihydrochloride (DMH), and N-bis(2-hydroxypropyl)nitrosamine (DHPN)

[b]Authors report significant trend.

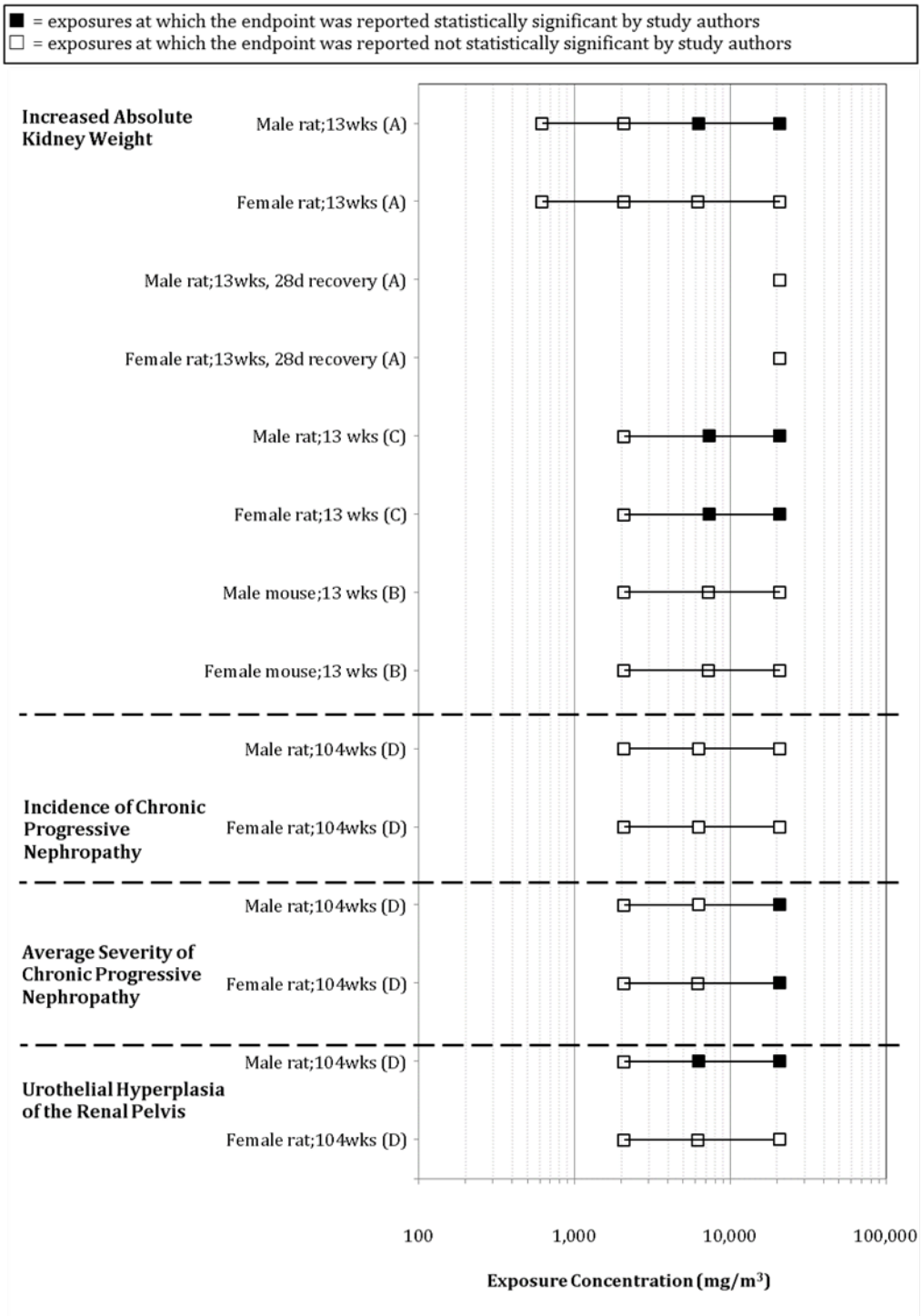
[c]4.18 mg/m^3 = 1 ppm.

[d]Conversion performed by study authors.



Sources: (A) Cohen et al., 2011 reanalysis of JPEC, 2010a; (B) Fujii et al., 2010; JPEC, 2008e; (C) Gaoua, 2004b; (D) Hagiwara et al., 2011; (E) Miyata et al., 2013; JPEC, 2008c; (F) Suzuki et al., 2012; JPEC, 2010a

Figure 3. Exposure-response array of kidney effects following oral exposure to ETBE.



Sources: (A) JPEC, 2008b; (B) Medinsky et al., 1999; Bond et al., 1996a (C) Medinsky et al., 1999; Bond et al., 1996b (D) Saito et al., 2013; JPEC, 2010b

Figure 4. Exposure-response array of kidney effects following inhalation exposure to ETBE.

Table 4. Additional kidney effects potentially relevant to mode of action in animals exposed to ETBE

Reference and study design	Results (incidence or severity)
JPEC (2008a) rat, CRL:CD(SD) inhalation - vapor male (10/group): 0, 150, 500, 1,500, 5,000 ppm (0, 627, 2,090, 6,270, 20,900 mg/m^3)[a]; female (10/group): 0, 150, 500, 1,500, 5,000 ppm (0, 627, 2,090, 6,270, 20,900 mg/m^3)[a] dynamic whole body chamber; 6 hrs/d, 5 d/wk for 13 wks; generation method, analytical concentration and method were reported	**Male** Dose (mg/m^3) / Incidence of hyaline droplets in the proximal tube epithelium 0 / 0/10 627 / 3/10 2,090 / 8/10* 6,270 / 8/10* 20,900 / 8/10* Unspecified representative samples reported as "weakly positive" for α_{2u}-globulin in males; no hyaline droplets observed in proximal tubule of females; hyaline droplets positive for α_{2u} -globulin not examined in females.
JPEC (2008b); Miyata et al. (2013) rat, CRL:CD(SD) oral - gavage male (15/group): 0, 5, 25, 100, 400 mg/kg-d; female (15/group): 0, 5, 25, 100, 400 mg/kg-d daily for 180 d	**Male** / **Female** Dose (mg/kg-d) / Incidence of hyaline droplets / Incidence of hyaline droplets positive for α_{2u}-globulin / Dose (mg/kg-d) / Incidence of hyaline droplets 0 / 0/15 / 0/1 / 0 / 0/15 5 / 0/15 / - / 5 / - 25 / 0/15 / - / 25 / - 100 / 4/15 / 2/2 / 100 / - 400 / 10/15* / 1/1 / 400 / 0/15
Medinsky et al. (1999); Bond et al. (1996) rat, Fischer 344 inhalation - vapor male (48/group): 0, 500, 1,750, 5,000 ppm (0, 2,090, 7,320, 20,900 mg/m^3)[a]; female (48/group): 0, 500, 1,750, 5,000 ppm (0, 2,090, 7,320, 20,900 mg/m^3)[a] dynamic whole body chamber; 6 hrs/d, 5 d/wk for 13 wks; generation method, analytical concentration and method were reported	**Male** / **Female** Dose (mg/m^3) / Hyaline droplet severity / Proximal tubule proliferation / Proximal tubule proliferation 0 / 1.8 / - / - 2,090 / 3.0 / 137%* / 73% 7,320 / 3.2 / 274%* / 64% 20,900 / 3.8 / 171%* / 47%

Reference and study design	Results (incidence or severity)
Saito et al. (2013); JPEC (2010b) rat, Fischer 344 inhalation - vapor male (50/group): 0, 500, 1,500, 5,000 ppm (0, 2,090, 6,270, 20,900 mg/m^3)[a]; female (50/group): 0, 500, 1,500, 5,000 ppm (0, 2,090, 6,270, 20,900 mg/m^3)[a] dynamic whole body inhalation; 6 hrs/d, 5 d/wk for 104 wks; generation method, analytical concentration and method were reported	**Male** No hyaline droplets observed. **Female** No hyaline droplets observed.
Suzuki et al. (2012); JPEC (2010a) rat, Fischer 344 oral - water male (50/group): 0, 625, 2,500, 10,000 ppm (0, 28, 121, 542 mg/kg-d)[b]; female (50/group): 0, 625, 2,500, 10,000 ppm (0, 46, 171, 560 mg/kg-d)[b] daily for 104 wks	**Male** No hyaline droplets observed. **Female** No hyaline droplets observed.

[a]4.18 mg/m^3 = 1 ppm.
[b]Conversion performed by study authors.
*: result is statistically significant ($p < 0.05$) based on analysis of data by study authors.
-: for controls, no response relevant; for other doses, no quantitative response reported.

Table 5. Summary of data informing whether the α_{2u}-globulin process is occurring in male rats exposed to ETBE

Criterion	Duration	Results	Reference
(1) Hyaline droplets are increased in size and number	1 wk	(+)[a]	Medinsky et al. (1999)
	4 wks	(+)[a]	Medinsky et al. (1999)
	13 wks	(+)[a]	Medinsky et al. (1999)
	13 wks	+	JPEC (2008a)
	26 wks	+	Miyata et al. (2013); JPEC (2008b)
	104 wks	–	Suzuki et al. (2012)
	104 wks	–	Saito et al. (2013); JPEC (2010b)
(2) The protein in the hyaline droplets is α_{2u}-globulin	1 wk	(+)[b]	JPEC (2008a)
	4 wks	(+)[b]	Medinsky et al. (1999)
	13 wks	(+)[b]	Medinsky et al. (1999)
	13 wks	(+)[b]	JPEC (2008a)
	26 wks	(+)[c]	Miyata et al. (2013); JPEC (2008b)
(3) Several (but not necessarily all) additional steps in the pathological sequence are present in male rats, such as:			
(a) single-cell necrosis	13 wks	–	JPEC (2008a)
	13 wks	–	Medinsky et al. (1999)
	26 wks	–	Miyata et al. (2013); JPEC (2008b)
	104 wks	–	Suzuki et al. (2012); JPEC (2010a)
	104 wks	–	Saito et al. (2013); JPEC (2010b)
(b) exfoliation of epithelial cells into the tubular lumen	13 wks	–	JPEC (2008a)
	13 wks	–	Medinsky et al. (1999)
	26 wks	–	Miyata et al. (2013); JPEC (2008b)
	104 wks	–	Suzuki et al. (2012); JPEC (2010a)
	104 wks	–	Saito et al. (2013); JPEC (2010b)
(c) granular casts	13 wks	–	JPEC (2008a)
	13 wks	(+)	Cohen et al. (2011)
	13 wks	–	Medinsky et al. (1999)
	26 wks	–	Miyata et al. (2013); JPEC (2008b)
	104 wks	–	Suzuki et al. (2012); JPEC (2010a)
	104 wks	–	Saito et al. (2013); JPEC (2010b)
(d) linear mineralization of tubules in the renal papilla	13 wks	–	JPEC (2008a)
	13 wks	–	Medinsky et al. (1999)
	26 wks	–	Miyata et al. (2013); JPEC (2008b)
	104 wks	+	Suzuki et al. (2012); JPEC (2010a); Cohen et al. (2011)
	104 wks	+	Saito et al. (2013); JPEC (2010b)
(e) foci of tubular hyperplasia	13 wks	–	JPEC (2008a)
	13 wks	+/-[d]	Medinsky et al. (1999)
	26 wks	–	Miyata et al. (2013); JPEC (2008b)
	104 wks	–	Suzuki et al. (2012); JPEC (2010a)
	104 wks	–	Saito et al. (2013); JPEC (2010b)

[a]Droplet severity.
[b]Unspecified "representative samples" examined.
[c]Three samples from highest two dose groups examined.
[d]Labeling index statistically significantly increased, but no hyperplasia reported.
+ = Statistically significant change reported in one or more treated groups.
(+) = Effect was reported in one or more treated groups, but statistics not reported.
– = No statistically significant change reported in any of the treated groups.

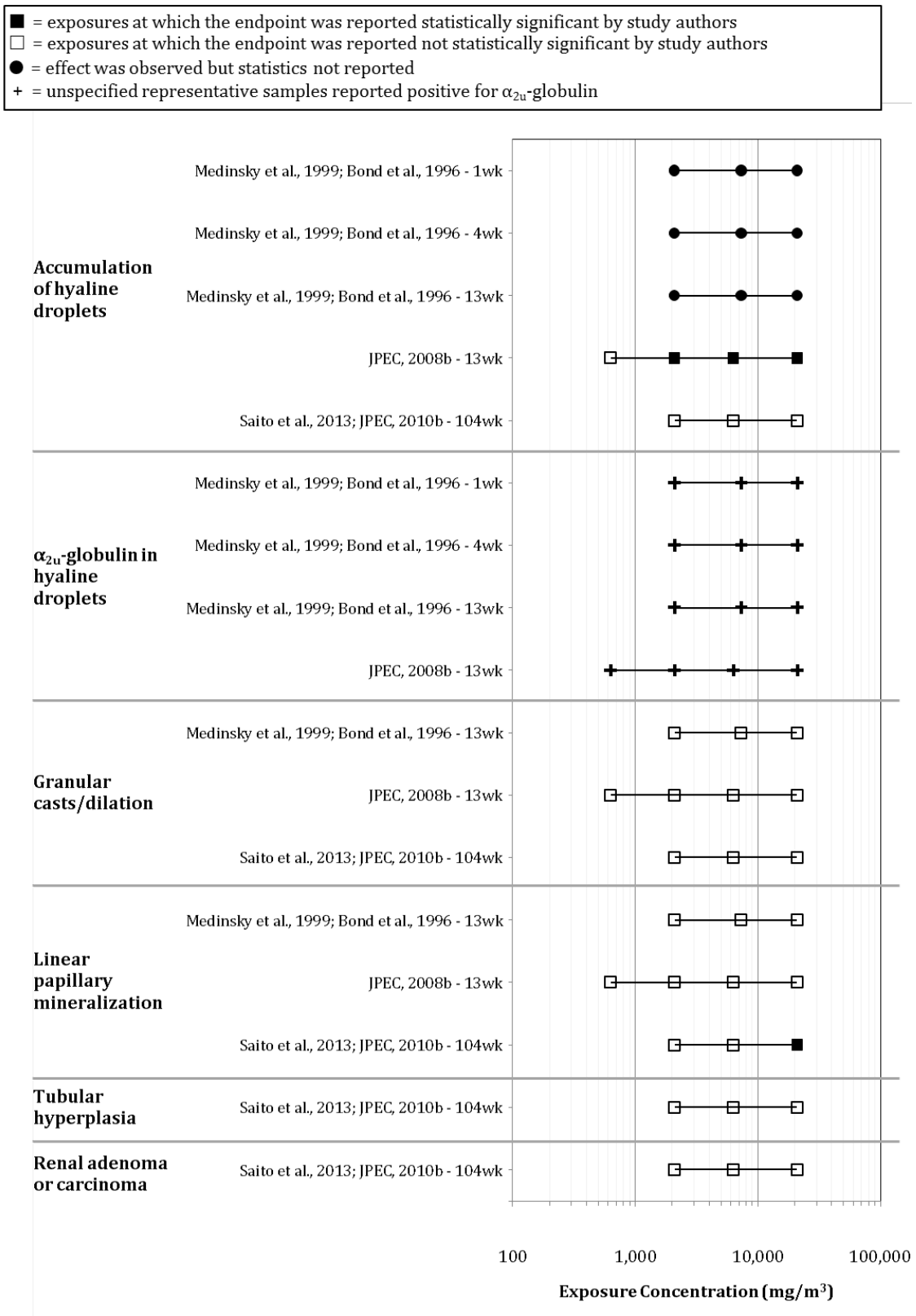


Figure 5. ETBE inhalation exposure array of α_{2u}-globulin data in male rats

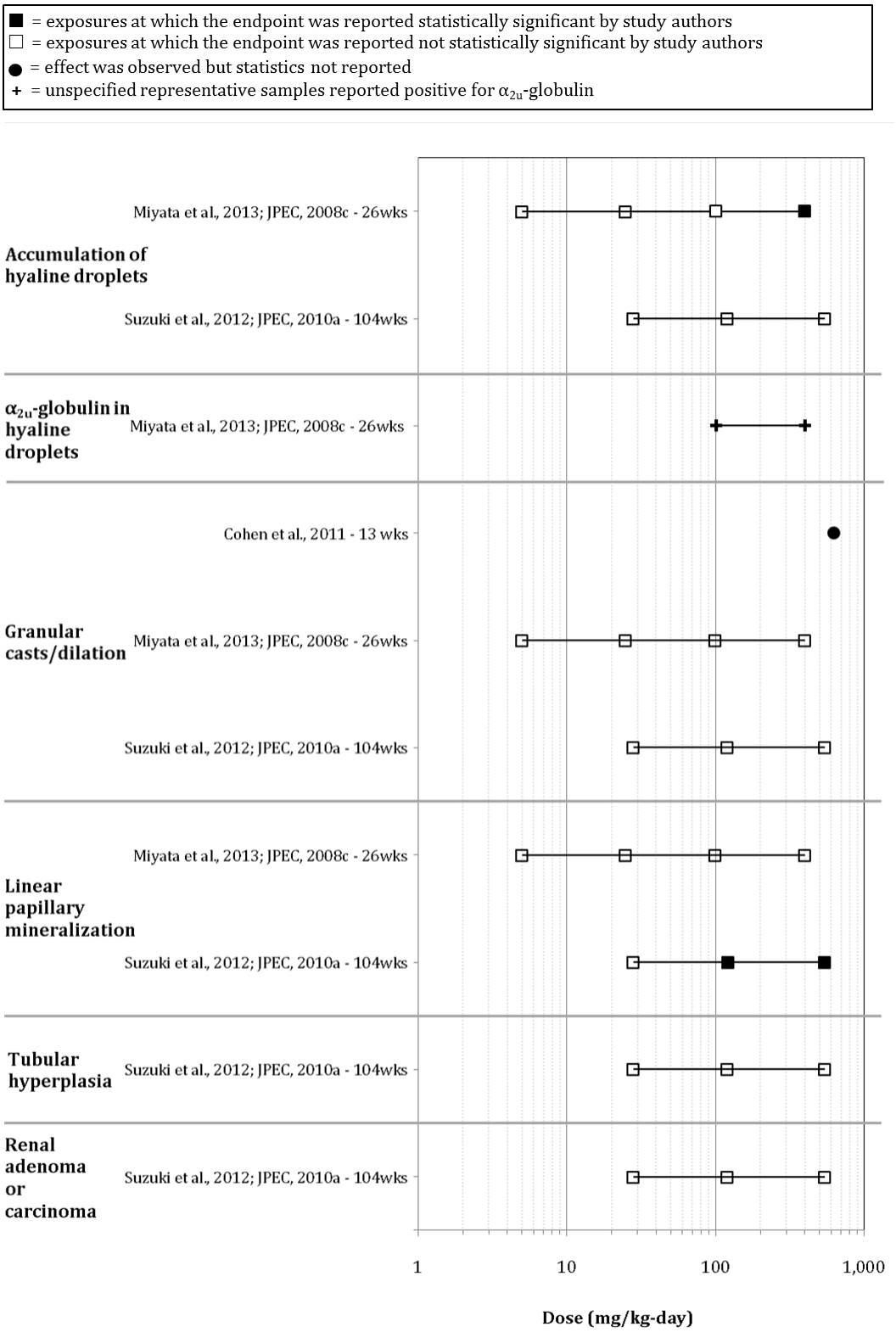


Figure 6. ETBE oral exposure array of α_{2u}-globulin data in male rats

Bond, JA; Medinsky, MA; Wolf, DC; Dorman, DC; Cattley, R; Farris, G; Wong, B; Morgan, K; Janszen, D; Turner, MJ; Sumner, SCJ. (1996). Ethyl tertiary butyl ether (ETBE): ninety-day vapor inhalation toxicity study with neurotoxicity evaluations in Fischer 344 rats [TSCA Submission] (pp. 1-90). (89970000047). Research Triangle Park, NC: Chemical Industry Institute of Toxicology under contract to ARCO Chemical Company. http://yosemite.epa.gov/oppts/epatscat8.nsf/by+Service/1332F4B209355DC785256F9E006B7EA0/$File/89970000047.pdf.

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