

**APPENDIX 1**

**SUMMARY TABLES OF  
GENETIC AND RELATED EFFECTS**

**Summary table of genetic and related effects of trichloroethylene without mutagenic stabilizers**

Non-mammalian systems				Mammalian systems			
Pro-karyotes	Lower eukaryotes	Plants	Insects	<i>In vitro</i>		<i>In vivo</i>	
				Animal cells	Human cells	Animal	Humans
D G	D R G A	D G C	R G C A	D G S M C A T I	D G S M C A T I	D G S M C DL A	D S M C A
- <sup>1</sup> ?	+ + + <sup>1</sup>		- <sup>1</sup>	- <sup>1</sup> + <sup>1</sup> + <sup>1</sup> - <sup>1</sup> + <sup>1</sup> + <sup>1</sup>	- <sup>1</sup>	+ - <sup>1</sup> - <sup>1</sup> + - <sup>1</sup> - <sup>1</sup>	

A, aneuploidy; C, chromosomal aberrations; D, DNA damage; DL, dominant lethal mutation; G, gene mutation; I, inhibition of intercellular communication; M, micronuclei; R, mitotic recombination and gene conversion; S, sister chromatid exchange; T, cell transformation

In completing the table, the following symbols indicate the consensus of the Working Group with regard to the results for each end-point:

- + considered to be positive for the specific end-point and level of biological complexity
- +<sup>1</sup> considered to be positive, but only one valid study was available to the Working Group
- considered to be negative
- <sup>1</sup> considered to be negative, but only one valid study was available to the Working Group
- ? considered to be equivocal or inconclusive (e.g. there were contradictory results from different laboratories; there were confounding exposures; the results were equivocal)

**Summary table of genetic and related effects of trichloroethylene containing mutagenic stabilizers, or of uncertain purity**

Non-mammalian systems				Mammalian systems			
Pro-karyotes	Lower eukaryotes	Plants	Insects	<i>In vitro</i>		<i>In vivo</i>	
				Animal cells	Human cells	Animal	Humans
D G	D R G A	D G C	R G C A	D G S M C A T I	D G S M C A T I	D G S M C DL A	D S M C A
- <sup>1</sup> +	+ + + <sup>1</sup>	+ <sup>1</sup>		+ - <sup>1</sup> - <sup>1</sup> +	? <sup>1</sup>	- <sup>1</sup> + -	

A, aneuploidy; C, chromosomal aberrations; D, DNA damage; DL, dominant lethal mutation; G, gene mutation; I, inhibition of intercellular communication; M, micronuclei; R, mitotic recombination and gene conversion; S, sister chromatid exchange; T, cell transformation

In completing the table, the following symbols indicate the consensus of the Working Group with regard to the results for each end-point:

- + considered to be positive for the specific end-point and level of biological complexity
- +<sup>1</sup> considered to be positive, but only one valid study was available to the Working Group
- considered to be negative
- <sup>1</sup> considered to be negative, but only one valid study was available to the Working Group
- ? considered to be equivocal or inconclusive (e.g. there were contradictory results from different laboratories; there were confounding exposures; the results were equivocal)

**Summary table of genetic and related effects of tetrachloroethylene**

Non-mammalian systems				Mammalian systems			
Pro-karyotes	Lower eukaryotes	Plants	Insects	<i>In vitro</i>		<i>In vivo</i>	
				Animal cells	Human cells	Animal	Humans
D G	D R G A	D G C	R G C A	D G S M C A T I	D G S M C A T I	D G S M C DL A	D S M C A
- -	? - ? <sup>1</sup>	+ <sup>1</sup> ? <sup>1</sup>	- <sup>1</sup>	- - <sup>1</sup> - <sup>1</sup> - ?			- <sup>1</sup> - <sup>1</sup>

A, aneuploidy; C, chromosomal aberrations; D, DNA damage; DL, dominant lethal mutation; G, gene mutation; I, inhibition of intercellular communication; M, micronuclei; R, mitotic recombination and gene conversion; S, sister chromatid exchange; T, cell transformation

In completing the table, the following symbols indicate the consensus of the Working Group with regard to the results for each end-point:

- + considered to be positive for the specific end-point and level of biological complexity
- +<sup>1</sup> considered to be positive, but only one valid study was available to the Working Group
- considered to be negative
- <sup>1</sup> considered to be negative, but only one valid study was available to the Working Group
- ? considered to be equivocal or inconclusive (e.g. there were contradictory results from different laboratories; there were confounding exposures; the results were equivocal)

Summary table of genetic and related effects of 1,2,3-trichloropropane

Non-mammalian systems				Mammalian systems			
Pro-karyotes	Lower eukaryotes	Plants	Insects	<i>In vitro</i>		<i>In vivo</i>	
				Animal cells	Human cells	Animal	Humans
D G	D R G A	D G C	R G C A	D G S M C A T I	D G S M C A T I	D G S M C DL A	D S M C A
- <sup>1</sup> +				- <sup>1</sup> + <sup>1</sup> + <sup>1</sup> + <sup>1</sup> + <sup>1</sup>		+ <sup>1</sup> - <sup>1</sup>	

A, aneuploidy; C, chromosomal aberrations; D, DNA damage; DL, dominant lethal mutation; G, gene mutation; I, inhibition of intercellular communication; M, micronuclei; R, mitotic recombination and gene conversion; S, sister chromatid exchange; T, cell transformation

In completing the table, the following symbols indicate the consensus of the Working Group with regard to the results for each end-point:

- + considered to be positive for the specific end-point and level of biological complexity
- +<sup>1</sup> considered to be positive, but only one valid study was available to the Working Group
- considered to be negative
- <sup>1</sup> considered to be negative, but only one valid study was available to the Working Group
- ? considered to be equivocal or inconclusive (e.g. there were contradictory results from different laboratories; there were confounding exposures; the results were equivocal)

**Summary table of genetic and related effects of chloral hydrate**

Non-mammalian systems				Mammalian systems			
Pro-karyotes	Lower eukaryotes	Plants	Insects	<i>In vitro</i>		<i>In vivo</i>	
				Animal cells	Human cells	Animal	Humans
D G	D R G A	D G C	R G C A	D G S M C A T I	D G S M C A T I	D G S M C DL A	D S M C A
?	? - <sup>1</sup> +		+ <sup>1</sup>	- + + <sup>1</sup> + - <sup>1</sup>	- <sup>1</sup> ? <sup>1</sup> + +	? + +	

A, aneuploidy; C, chromosomal aberrations; D, DNA damage; DL, dominant lethal mutation; G, gene mutation; I, inhibition of intercellular communication; M, micronuclei; R, mitotic recombination and gene conversion; S, sister chromatid exchange; T, cell transformation

In completing the table, the following symbols indicate the consensus of the Working Group with regard to the results for each end-point:

- + considered to be positive for the specific end-point and level of biological complexity
- +<sup>1</sup> considered to be positive, but only one valid study was available to the Working Group
- considered to be negative
- <sup>1</sup> considered to be negative, but only one valid study was available to the Working Group
- ? considered to be equivocal or inconclusive (e.g. there were contradictory results from different laboratories; there were confounding exposures; the results were equivocal)

**Summary table of genetic and related effects of dichloroacetic acid**

Non-mammalian systems				Mammalian systems			
Pro-karyotes	Lower eukaryotes	Plants	Insects	<i>In vitro</i>		<i>In vivo</i>	
				Animal cells	Human cells	Animal	Humans
D G	D R G A	D G C	R G C A	D G S M C A T I	D G S M C A T I	D G S M C DL A	D S M C A
? ?				- <sup>1</sup>	- <sup>1</sup>	?	

A, aneuploidy; C, chromosomal aberrations; D, DNA damage; DL, dominant lethal mutation; G, gene mutation; I, inhibition of intercellular communication; M, micronuclei; R, mitotic recombination and gene conversion; S, sister chromatid exchange; T, cell transformation

In completing the table, the following symbols indicate the consensus of the Working Group with regard to the results for each end-point:

+ considered to be positive for the specific end-point and level of biological complexity

+<sup>1</sup> considered to be positive, but only one valid study was available to the Working Group

- considered to be negative

-<sup>1</sup> considered to be negative, but only one valid study was available to the Working Group

? considered to be equivocal or inconclusive (e.g. there were contradictory results from different laboratories; there were confounding exposures; the results were equivocal)

Summary table of genetic and related effects of trichloroacetic acid

Non-mammalian systems				Mammalian systems			
Pro-karyotes	Lower eukaryotes	Plants	Insects	<i>In vitro</i>		<i>In vivo</i>	
				Animal cells	Human cells	Animal	Humans
D G	D R G A	D G C	R G C A	D G S M C A T I	D G S M C A T I	D G S M C DL A	D S M C A
- -		+ <sup>1</sup>		- <sup>1</sup> + <sup>1</sup>	- <sup>1</sup> - <sup>1</sup>	? ? + <sup>1</sup>	

A, aneuploidy; C, chromosomal aberrations; D, DNA damage; DL, dominant lethal mutation; G, gene mutation; I, inhibition of intercellular communication; M, micronuclei; R, mitotic recombination and gene conversion; S, sister chromatid exchange; T, cell transformation

In completing the table, the following symbols indicate the consensus of the Working Group with regard to the results for each end-point:

- + considered to be positive for the specific end-point and level of biological complexity
- +<sup>1</sup> considered to be positive, but only one valid study was available to the Working Group
- considered to be negative
- <sup>1</sup> considered to be negative, but only one valid study was available to the Working Group
- ? considered to be equivocal or inconclusive (e.g. there were contradictory results from different laboratories; there were confounding exposures; the results were equivocal)



**Summary table of genetic and related effects of 1-chloro-2-methylpropene**

Non-mammalian systems				Mammalian systems			
Pro-karyotes	Lower eukaryotes	Plants	Insects	<i>In vitro</i>		<i>In vivo</i>	
				Animal cells	Human cells	Animal	Humans
D G	D R G A	D G C	R G C A	D G S M C A T I	D G S M C A T I	D G S M C DL A	D S M C A
+ <sup>1</sup>			+ <sup>1</sup> + <sup>1</sup>	+ <sup>1</sup> + <sup>1</sup> - <sup>1</sup>			

A, aneuploidy; C, chromosomal aberrations; D, DNA damage; DL, dominant lethal mutation; G, gene mutation; I, inhibition of intercellular communication; M, micronuclei; R, mitotic recombination and gene conversion; S, sister chromatid exchange; T, cell transformation

In completing the table, the following symbols indicate the consensus of the Working Group with regard to the results for each end-point:

- + considered to be positive for the specific end-point and level of biological complexity
- +<sup>1</sup> considered to be positive, but only one valid study was available to the Working Group
- considered to be negative
- <sup>1</sup> considered to be negative, but only one valid study was available to the Working Group
- ? considered to be equivocal or inconclusive (e.g. there were contradictory results from different laboratories; there were confounding exposures; the results were equivocal)

**Summary table of genetic and related effects of 3-chloro-2-methylpropene**

Non-mammalian systems				Mammalian systems			
Pro-karyotes	Lower eukaryotes	Plants	Insects	<i>In vitro</i>		<i>In vivo</i>	
				Animal cells	Human cells	Animal	Humans
D G	D R G A	D G C	R G C A	D G S M C A T I	D G S M C A T I	D G S M C DL A	D S M C A
+			+ <sup>1</sup>	+ <sup>1</sup> + <sup>1</sup> + <sup>1</sup>		- <sup>1</sup>	

A, aneuploidy; C, chromosomal aberrations; D, DNA damage; DL, dominant lethal mutation; G, gene mutation; I, inhibition of intercellular communication; M, micronuclei; R, mitotic recombination and gene conversion; S, sister chromatid exchange; T, cell transformation

In completing the table, the following symbols indicate the consensus of the Working Group with regard to the results for each end-point:

- + considered to be positive for the specific end-point and level of biological complexity
- +<sup>1</sup> considered to be positive, but only one valid study was available to the Working Group
- considered to be negative
- <sup>1</sup> considered to be negative, but only one valid study was available to the Working Group
- ? considered to be equivocal or inconclusive (e.g. there were contradictory results from different laboratories; there were confounding exposures; the results were equivocal)

Summary table of genetic and related effects of acrolein

Non-mammalian systems				Mammalian systems			
Pro-karyotes	Lower eukaryotes	Plants	Insects	<i>In vitro</i>		<i>In vivo</i>	
				Animal cells	Human cells	Animal	Humans
D G	D R G A	D G C	R G C A	D G S M C A T I	D G S M C A T I	D G S M C DL A	D S M C A
+ +	- <sup>1</sup> - <sup>1</sup>		+ <sup>1</sup> - <sup>1</sup>	+ ? ? ? - <sup>1</sup>	? + <sup>1</sup> + <sup>1</sup>	- <sup>1</sup> - <sup>1</sup>	

A, aneuploidy; C, chromosomal aberrations; D, DNA damage; DL, dominant lethal mutation; G, gene mutation; I, inhibition of intercellular communication; M, micronuclei; R, mitotic recombination and gene conversion; S, sister chromatid exchange; T, cell transformation

In completing the table, the following symbols indicate the consensus of the Working Group with regard to the results for each end-point:

+ considered to be positive for the specific end-point and level of biological complexity

+<sup>1</sup> considered to be positive, but only one valid study was available to the Working Group

- considered to be negative

-<sup>1</sup> considered to be negative, but only one valid study was available to the Working Group

? considered to be equivocal or inconclusive (e.g. there were contradictory results from different laboratories; there were confounding exposures; the results were equivocal)

**Summary table of genetic and related effects of crotonaldehyde**

Non-mammalian systems				Mammalian systems			
Pro-karyotes	Lower eukaryotes	Plants	Insects	<i>In vitro</i>		<i>In vivo</i>	
				Animal cells	Human cells	Animal	Humans
D G	D R G A	D G C	R G C A	D G S M C A T I	D G S M C A T I	D G S M C DL A	D S M C A
+ +			+ <sup>1</sup> + <sup>1</sup>	- <sup>1</sup>		+ <sup>1</sup>	

A, aneuploidy; C, chromosomal aberrations; D, DNA damage; DL, dominant lethal mutation; G, gene mutation; I, inhibition of intercellular communication; M, micronuclei; R, mitotic recombination and gene conversion; S, sister chromatid exchange; T, cell transformation

In completing the table, the following symbols indicate the consensus of the Working Group with regard to the results for each end-point:

- + considered to be positive for the specific end-point and level of biological complexity
- +<sup>1</sup> considered to be positive, but only one valid study was available to the Working Group
- considered to be negative
- <sup>1</sup> considered to be negative, but only one valid study was available to the Working Group
- ? considered to be equivocal or inconclusive (e.g. there were contradictory results from different laboratories; there were confounding exposures; the results were equivocal)

Summary table of genetic and related effects of furan

Non-mammalian systems				Mammalian systems			
Pro-karyotes	Lower eukaryotes	Plants	Insects	<i>In vitro</i>		<i>In vivo</i>	
				Animal cells	Human cells	Animal	Humans
D G	D R G A	D G C	R G C A	D G S M C A T I	D G S M C A T I	D G S M C DL A	D S M C A
-			- <sup>1</sup>	- <sup>1</sup> + <sup>1</sup> + <sup>1</sup> + <sup>1</sup>		- <sup>1</sup> - <sup>1</sup> + <sup>1</sup>	

A, aneuploidy; C, chromosomal aberrations; D, DNA damage; DL, dominant lethal mutation; G, gene mutation; I, inhibition of intercellular communication; M, micronuclei; R, mitotic recombination and gene conversion; S, sister chromatid exchange; T, cell transformation

In completing the table, the following symbols indicate the consensus of the Working Group with regard to the results for each end-point:

+ considered to be positive for the specific end-point and level of biological complexity  
 +<sup>1</sup> considered to be positive, but only one valid study was available to the Working Group

- considered to be negative

-<sup>1</sup> considered to be negative, but only one valid study was available to the Working Group

? considered to be equivocal or inconclusive (e.g. there were contradictory results from different laboratories; there were confounding exposures; the results were equivocal)

Summary table of genetic and related effects of furfural

Non-mammalian systems				Mammalian systems			
Pro-karyotes	Lower eukaryotes	Plants	Insects	<i>In vitro</i>		<i>In vivo</i>	
				Animal cells	Human cells	Animal	Humans
D G	D R G A	D G C	R G C A	D G S M C A T I	D G S M C A T I	D G S M C DL A	D S M C A
- <sup>1</sup> -			+ <sup>1</sup> - <sup>1</sup>	+ <sup>1</sup> + <sup>1</sup> +	+ <sup>1</sup>	- <sup>1</sup> - <sup>1</sup>	

A, aneuploidy; C, chromosomal aberrations; D, DNA damage; DL, dominant lethal mutation; G, gene mutation; I, inhibition of intercellular communication; M, micronuclei; R, mitotic recombination and gene conversion; S, sister chromatid exchange; T, cell transformation

In completing the table, the following symbols indicate the consensus of the Working Group with regard to the results for each end-point:

- + considered to be positive for the specific end-point and level of biological complexity
- +<sup>1</sup> considered to be positive, but only one valid study was available to the Working Group
- considered to be negative
- <sup>1</sup> considered to be negative, but only one valid study was available to the Working Group
- ? considered to be equivocal or inconclusive (e.g. there were contradictory results from different laboratories; there were confounding exposures; the results were equivocal)

**Summary table of genetic and related effects of benzofuran**

Non-mammalian systems				Mammalian systems			
Pro-karyotes	Lower eukaryotes	Plants	Insects	<i>In vitro</i>		<i>In vivo</i>	
				Animal cells	Human cells	Animal	Humans
D G	D R G A	D G C	R G C A	D G S M C A T I	D G S M C A T I	D G S M C DL A	D S M C A
-				+ <sup>1</sup> + <sup>1</sup> + <sup>1</sup>			

A, aneuploidy; C, chromosomal aberrations; D, DNA damage; DL, dominant lethal mutation; G, gene mutation; I, inhibition of intercellular communication; M, micronuclei; R, mitotic recombination and gene conversion; S, sister chromatid exchange; T, cell transformation

In completing the table, the following symbols indicate the consensus of the Working Group with regard to the results for each end-point:

+ considered to be positive for the specific end-point and level of biological complexity

+<sup>1</sup> considered to be positive, but only one valid study was available to the Working Group

- considered to be negative

-<sup>1</sup> considered to be negative, but only one valid study was available to the Working Group

? considered to be equivocal or inconclusive (e.g. there were contradictory results from different laboratories; there were confounding exposures; the results were equivocal)

**Summary table of genetic and related effects of vinyl acetate**

Non-mammalian systems				Mammalian systems			
Pro-karyotes	Lower eukaryotes	Plants	Insects	<i>In vitro</i>		<i>In vivo</i>	
				Animal cells	Human cells	Animal	Humans
D G	D R G A	D G C	R G C A	D G S M C A T I	D G S M C A T I	D G S M C DL A	D S M C A
+ <sup>1</sup> -				+ <sup>1</sup> + <sup>1</sup> + <sup>1</sup>	+ <sup>1</sup> + + <sup>1</sup> +	+ <sup>1</sup> + <sup>1</sup>	

A, aneuploidy; C, chromosomal aberrations; D, DNA damage; DL, dominant lethal mutation; G, gene mutation; I, inhibition of intercellular communication; M, micronuclei; R, mitotic recombination and gene conversion; S, sister chromatid exchange; T, cell transformation

In completing the table, the following symbols indicate the consensus of the Working Group with regard to the results for each end-point:

- + considered to be positive for the specific end-point and level of biological complexity
- +<sup>1</sup> considered to be positive, but only one valid study was available to the Working Group
- considered to be negative
- <sup>1</sup> considered to be negative, but only one valid study was available to the Working Group
- ? considered to be equivocal or inconclusive (e.g. there were contradictory results from different laboratories; there were confounding exposures; the results were equivocal)