

Table 23

Standardized Mortality Ratios¹ for Selected Causes of Death by
Total Integrated Dose, for men Working in Plants Producing Only PVC
Total Integrated Dose

Cause of Death with ICD Number ²	Total	12-49	50-99	100-199	200-299	300-399	400+
1. All causes	87.4**	73.2**	95.7	92.4	94.4	93.2	84.6
All malignancies							
2. (140-205)	98.6	83.6	110.3	78.3	109.5	71.6	151.8
Malignant neoplasms, buccal and pharynx (140-148)	26.9	0	152.9	0	0	0	0
Malignant neoplasms, digestive organs and peritoneum (150-159)	74.4	73.4	18.8	93.1	57.8	40.8	178.8
Malignant neoplasms, respiratory system (160-164)	104.4	84.4	166.1	60.7	89.6	71.6	166.9
Malignant neoplasms, genital organs (170-179)	56.4	0	0	86.6	105.3	247.9	0
Malignant neoplasms, urinary organs (180-181)	120.9	356.2	115.1	0	111.7	0	0
Malignant neoplasms, other 8. and unspecified sites	133.3	56.0	117.7	130.3	260.9	88.9	187.9
Leukemia and aleukemia 9. (204)	150.9	80.6	336.4	99.5	141.3	0	227.6
10. Lymphomas (200-03, 205)	123.0	102.4	142.6	63.8	183.5	189.0	136.2
Major cardiovascular and renal 11. diseases (330-34, 400-68, 592-94)	91.9	73.9	92.0	106.6	98.6	109.8	77.1
12. Cirrhosis of liver (581)	59.5*	43.7	118.4	24.9	35.0	139.0	45.6
13. All other causes	76.4**	70.1	91.3	84.7	80.9	67.9	43.2*
Number of men	6521	1735	1389	1422	813	394	768
Number of person-years	88,870	31,172	19,410	19,003	9,372	4,468	5,445

¹SMR's adjusted for deaths with unknown cause.

²Numbers indicate categories in the 1955 version of the International Classification of Diseases.

*Significant at the .05 level

**Significant at the .01 level

Table 24 Standardized Mortality Ratios¹ for Selected Causes of Death by Total Integrated Dose, for Men Working in Plants Producing other than PVC
Total Integrated Dose

Cause of Death with ICD Number ²	Total	12-49	50-99	100-199	200-299	300-399	400+
1. All causes	76.5**	57.5**	68.3**	92.0	107.8	79.6	97.6
2. All malignancies (140-205)	118.5	74.6	133.6	118.4	170.1	122.7	241.5
3. Malignant neoplasms, buccal and pharynx (140-148)	329.9	776.9	420.8	0	0	0	0
4. Malignant neoplasms, digestive organs and peritoneum (150-159)	72.8	64.0	53.1	88.2	82.2	0	256.3
5. Malignant neoplasms, respiratory system (160-164)	121.3	65.8	50.9	213.0	225.8	122.5	0
6. Malignant neoplasms, genital organs (170-179)	57.5	0	260.1	0	0	0	0
7. Malignant neoplasms, urinary organs (180-181)	126.8	0	329.3	0	487.8	0	0
8. Malignant neoplasms, other and unspecified sites	186.8	0	290.2	183.6	170.7	300.7	1098.0
9. Leukemia and aleukemia (204)	126.1	176.6	0	0	582.1	0	0
10. Lymphomas (200-03, 205)	81.1	0	176.5	0	0	670.7	0
11. Major cardiovascular and renal diseases (330-34, 400-68, 592-94)	98.9	77.5	69.0	116.4	152.0	88.9	162.8
12. Cirrhosis of liver (581)	47.7	48.9	0	75.6	0	234.1	0
13. All other causes	41.2**	34.1**	50.4**	51.6**	37.9**	36.6*	32.7**
Number of men	3,156	1,043	917	632	275	142	147
Number of person-years	31,436	13,251	3,294	6,422	2,556	1,185	734

¹SMR's adjusted for deaths with unknown cause.

²Numbers indicate categories in the 1955 version of the International Classification of Diseases.

*Significant at the .05 level

**Significant at the .01 level

Table 25

Deaths Due to Malignant Neoplasms of the Liver
by Type of Production Facility

Type of Facility	Study No.	Age at Death	Months Exposed	Cause of Death	Autopsy
PVC	1522	66	176	Generalized abdominal carcinoma (2 mos.); Carcinoma of the liver (8 mos.)	No
	5765	45	167	Angiosarcoma right lobe of liver (10 mos.)	Yes
	6666	41	50	Hemangioendothelial sarcoma of liver with metastases to lungs; Cirrhosis of liver and ascites; Hepatoma	Yes
	7303	38	174	Liver failure (1 mo.); Cancer of liver, primary (15 mos.)	-
	7369	70	182	Adenocarcinoma of common bile duct with liver metastasis (2 yrs.)	No
	7376	52	238	Cardiac tamponade and massive hemothorax; Widely metastatic angiosarcoma of liver (4 mos.)	-
	7385	43	214	Hepatic failure; Primary carcinoma of liver	Yes
	9613	67	95	Carcinomatosis; Cancer of gall bladder (6 mos.)	No
Other (excluding copolymer)	6084	65	157	Carcinoma of liver, primary (6 mos.)	-

Table 26

Deaths Due to Malignant Neoplasms of Other
and Unspecified Sites, by Type of Produc-
tion Facility

Type of Facility	Study No.	Age at Death	Months Exposed	Cause of Death	Autopsy
PVC	2744	38	186	Widespread metastatic melanoma (1 yr.); Malignant melanoma of back	Yes
	3700	48	50	Malignant melanoma with widespread metastases	No
	5246	67	201	Liposarcoma with metastasis (3 mos.)	Yes
	5769	52	239	Carcinomatosis; Carcinoma vertebral body	Yes
	5783	69	166	Metastatic carcinoma of abdomen, critical site undertermined (Pulmonary emphysema)	-
	6339	58	25	Carcinoma larynx and throat	-
	6578	79	60	Generalized carcinomatosis; Carcinoma tongue - pharynx	-
	6779	57	48	Respiratory arrest; Squamous cell carcinoma of the neck (1 yr.)	No
	6871	43	32	Glioblastoma multiforme (4 mos.)	No
	6907	54	18	Astrocytoma brain (5 mos.)	Yes
	7279	57	271	Brain tumor; Glioblastoma multiforme (18 mos.)	-
	7300	44	211	Brain tumor, malignant (2 mos.)	-
	7301	55	133	Carcinomatosis (4 mos.), primary site undetermined	No

Table 26 (con't)

Deaths Due to Malignant Neoplasms of Other
and Unspecified Sites, by Type of Produc-
tion Facility (continued)

Type of Facility	Study No.	Age at Death	Months Exposed	Cause of Death	Autopsy
PVC(cont)	7306	53	216	Thyroid carcinoma with metastases	No
	7371	58	249	Brain tumor, malignant	No
	9506	47	190	Melanosarcoma; Malignant mole (3 yrs.)	No
	9550	48	139	Fibrosarcoma	No
	9953	59	220	Glioblastoma multiforme (6 mos.); Brain abscess	Yes
	A311	57	263	Glioblastoma multiforme (brain tumor) (8 mos.)	No
Copolymer	4433	54	81	Astrocytoma, malignant left cerebral hemisphere (1 yr.)	Yes
	4778	54	300	Cardiac arrest (1 hr.); Respiratory arrest and cerebral hypoxia (2 days); Widespread metastatic carcinoma (2 mos.)	-
	4786	61	318	Generalized metastasis undifferentiated (7 mos.); Squamous cell carcinoma, primary site undetermined	Yes
	4800	61	51	Carcinoma of the brain; Arteriosclerosis; Pneumonia due to static congestion	No
Other	2096	67	69	Brain tumor (carcinoma) (8 mos.)	-
	2850	64	193	Carcinomatosis, primary region not known (past history rheumatoid arthritis, myocardial infarction)	No
	3946	43	64	Meningitis and pneumonitis (5 wks.); Ependyma, 4th ventricle - brain (2 mos. post-op. craniotomy)	No
	8838	49	271	Brain tumor, malignant (3 mos.)	No

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Table 27 Distribution of Deaths Due to Malignancies
by Cause, of Men Working in Plants
Producing Copolymers.

Cause of Death with ICD Number*	Number of Deaths
All malignancies (140-205)	24
Malignant neoplasms, buccal and pharynx (140-48)	-
Malignant neoplasms, di- gestive organs and peritoneum (150-59)	6
Malignant neoplasms, respira- tory system (160-64)	7
Malignant neoplasms, genital organs (170-79)	1
Malignant neoplasms, urinary organs (180-81)	1
Malignant neoplasms, other and unspecified sites	6
Leukemia and aleukemia (204)	1
Lymphomas (200-03, 205)	2

* Numbers indicate categories in the 1955 version of the
International Classification of Diseases.