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## Suicide by Inhalation of Carbon Monoxide

During a recent review of deaths among Alaska residents related to carbon monoxide during the period 1981-84, 19 deaths caused by carbon monoxide were identified where suicide was entered on the death certificate or where suicide was the conclusion of a magistrate's inquiry. Description of these 19 fatalities is based on the certificates, pathology and magistrate's reports, and police investigations. Using multiple sources of data allows the Alaskan information to be more complete than compilations of national data, such as the recent CDC Suicide Surveillance Report<sup>1</sup> which is based on death certificates alone.

None of the 19 suicides recorded were associated directly with other deaths (multiple suicide or suicide-homicide related to carbon monoxide was not found). Six of the 19 suicides occurred in September, four in April; there were no suicides related to carbon monoxide in January, March, or December. The highest rates were in men and women in their 30's and 60's and men in their 40's. (Table 1). All 19 deaths were in Caucasians. Among the recorded suicides, evidence of ingestion of psychoactive drugs (including alcohol) was found in the body fluids of (8/19(42%). In 9 other suicides, drug screens were performed and no evidence of psychoactive substances was found.

Mechanism of death was determined from pathology reports and police records. All 19 victims were found inside vehicles, and in 8 cases a hose or tube connected the vehicle's exhaust pipe to the passenger compartment. Strong evidence of suicidal intent, including suicide notes, slashed wrists, and a medical history of acute depression were present in six others. Information which led to the characterization of the remaining five deaths as suicide (as opposed to "accident" or "of undetermined origin") was not apparent or was not obtained.

Alaska's 1980 rate of suicide by all methods (not adjusted for a relatively younger population) was 16.9/100,000 compared to a national rate of 11.6/100,000<sup>1</sup>. Among U.S. white males in 1980, 14.3% of suicides related to the category "hanging, strangulation, and suffocation", while the corresponding figure for white females was 11.9%. This category is broader than but inclusive of carbon monoxide intoxication. Based on an annual rate of 1.14/100,000 suicides by carbon monoxide per year, this method represents a lower proportion of suicides (about 7%) than the U.S. average.

Even with rates somewhat lower than are observed nationally, many features of suicide by carbon monoxide poisoning as practiced by Alaskans are amenable to prevention. On one level, suicide hotlines, crisis intervention, and sensitive counselling by medical personnel and others represents a prevention strategy; automobile exhaust checkups and the use of catalytic converters, both of which may reduce carbon monoxide emissions to the point that toxic levels are attained relatively more slowly<sup>2</sup>, represent others.

TABLE 1: Suicides by Carbon Monoxide Inhalation by Age and Sex  
Alaska 1981-84

## FEMALE

Age	Population*	Suicides	Rate/100,000/yr
<	37,741	--	--
10-19	34,176	1	.73
20-29	44,336	1	.58
30-39	35,627	2	1.40
40-49	20,083	--	--
50-59	13,233	--	--
60-69	7,969	1	3.13
70+	3,364	--	--
Total	196,529	5	.64

\*based on 1982 population estimate

## MALE

Age	Population*	Suicides	Rate/100,000/yr
<	39,445	--	--
10-19	37,703	1	.68
20-29	50,560	3	1.48
30-39	41,933	5	2.98
40-49	23,506	3	3.02
50-59	15,811	1	1.58
60-69	7,254	1	3.45
70+	3,580	--	--
Total	219,792	14	1.58

\*based on 1982 population estimate References:

1. Violence Epidemiology Branch, CHPE, CDC. Suicide Surveillance, Summary 1970?80. Atlanta, GA 1985.
2. Unsuccessful suicide by carbon monoxide: a secondary benefit of emissions control. West J Med 135: 360-363, Nov 1981.

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