



Bulletin No. 1

January 6, 1993

Potential Illness Due to Exposure to Oxygenated Fuel  
Anchorage, Alaska

**Background:**

The Section of Epidemiology recently collaborated with the National Center for Environmental Health, U.S. Centers for Disease Control and Prevention in an investigation of potential illness due to exposure of oxygenated fuels in Fairbanks, Alaska. Our findings were reported on December 11, 1992. (See Epidemiology Bulletin No. 26 December 22, 1992.) On December 11, 1992 the oxygenated fuel program was suspended in Fairbanks but continued in Anchorage. During the week of December 14-18, the Section of Epidemiology conducted a similar study in Anchorage.

**Methods:**

Three groups of people who routinely travel by motor vehicle were studied, employing a questionnaire similar to that used in Fairbanks. Those interviewed included 25 taxi drivers at the Anchorage International Airport, 29 employees of Anchorage Neighborhood Health Center, and 108 employees of Providence Hospital.

We used the same criteria to define a case of possible oxyfuel-related illness as in the Fairbanks investigation except that the cut-off date was changed to November 1, 1992, the date that all gas stations in Anchorage were required to use oxyfuel. A case was defined as a person who reported that on or after November 1, 1992 they experienced:

1. An increase in headaches; or
2. An increase in two or more of the following complaints:
  - nausea or vomiting
  - burning sensation in the nose or mouth
  - cough
  - dizziness
  - spaciness or disorientation
  - eye irritation

An individual who reported one (or more) symptoms of acute viral syndrome (diarrhea or loose stools; fever; sweats or chills; muscle aches) was considered to possibly have an acute infection and therefore was not counted as a case.

**Results:**

The proportion of persons interviewed who met the case definition was higher among taxi drivers (48%) than among the two groups of health care employees (25%, 27%). The proportion of health care employees who met the case definition in Anchorage (26%) was almost identical to the proportion in Fairbanks (29%), while the proportion of taxi drivers meeting the case definition in Anchorage (48%) was higher than in Fairbanks (33%).

The symptoms of persons meeting the case definition in Anchorage and Fairbanks are shown in Table 1. Headache was the most common complaint and was generally of short duration. A higher proportion of cases in Anchorage reported headache, nose or throat burning, eye irritation, and nausea or vomiting. As in Fairbanks, Anchorage cases reported more symptoms while traveling than while fueling.

Table 1. Comparison of symptoms in cases

Symptom	Fairbanks (N=45)		Anchorage (N=48)	
	N	%	N	%
Headache	34	(76)	42	(88)
Cough	18	(40)	17	(35)
Nose or throat burning	13	(29)	18	(38)
Eye irritation	13	(29)	21	(44)
Nausea or vomiting	5	(11)	14	(29)
Spaciness	6	(13)	7	(15)

**Discussion:**

The results in Anchorage are very similar to the results of the Fairbanks study. The proportion of health care workers in Anchorage who met the case definition was almost identical to the proportion in Fairbanks. A higher proportion of taxi drivers in Anchorage met the case definition than in Fairbanks. In both cities, taxi drivers had a higher proportion of cases than health care employees. As in Fairbanks, symptoms of illness were acute, mild, of short duration, and consisted primarily of headache, eye and throat irritation, and cough. Many persons related their symptoms to exposure either in or while fueling a motor vehicle. No

persons were identified who had experienced severe symptoms. While most persons who participated appeared sincere and honest in the reporting of their symptoms, several mentioned peripheral issues, including increased cost, lower gas mileage, and decreased car performance, that might have biased their reporting of symptoms.

These findings must be considered preliminary, requiring substantial additional investigation. Our limited study does not provide definitive evidence that symptoms are due to the oxyfuel program. Nevertheless, we believe that the findings of our investigation lend support to reports that both Anchorage and Fairbanks residents are experiencing illness associated with exposure to oxygenated fuel or motor vehicle exhaust. If we extrapolate from these results to the general population of Anchorage, then as many as 25,000 Anchorage residents may be experiencing symptoms due to exposure to oxyfuel.

**Recommendations:**

Given that no illness can be anticipated to occur from exposure to carbon monoxide in ambient air at the levels and frequency measured in the past in Anchorage and the very real possibility that illness is being caused by the oxyfuel program, we recommend that the oxyfuel program in Anchorage be suspended and that additional studies should be undertaken to provide definitive scientific information upon which to base decisions about use of oxyfuels in the future.

(Our thanks to Janet Cismoski, RN, CDE; Michael Beller, MD, MPH; Brad Gessner, MD; Mindy Schloss, RN, MPH; and Diane Ingle, BA for their assistance in conducting this investigation. Reported by Bruce Chandler, MD, MPH and John P. Middaugh, MD, Section of Epidemiology)