05-3xP

SM-32 (REV. 5-78)

Shell Oil Company
Interoffice Memorandum

MAY 2, 1985

RECEIVED
H.S. & E. SUPPORT
INFORMATION
MAY 6 10 27 AM '85

FROM: S. R. COWLES, M.D.

TO: C. E. ROSS, D.O.

SUBJECT: REVIEW OF SMR ELEVATIONS AT SHELL REFINERIES 1973-1983

Selected non statistically significant elevations in SMR's from the 5 larger refineries were reviewed for the period 1973-1983. Each case was reviewed for death certificate diagnosis and work history by cause of interest and refinery of employment. Patterns of disease or clustering by occupation were looked for. SMR's exceeding 1.5 were examined. Results can be summarized as follows:

1. Deer Park Refinery (SMR all causes 0.6 SMR all cancer 0.8)

   a) Cancer of the Liver (SMR=2.8)

      - Number of cases = 4 broken down as
        2 cancers of bile duct
        1 cholangiocarcinoma
        1 1° cancer of liver (with cirrhosis)
      - No particular pattern of employment evident in these cases.

   b) Cancer of Larynx (SMR=2.2)

      - Number of cases = 3, however on review, only 2 cases were cancer of the larynx. The third case was a bronchogenic carcinoma of the lung which had been miscoded.
      - 1 case was a painter, the other an operator in gas department, poly plant, and lube A.

   c) Cancer of Bone (SMR=5.7)

      - Number of cases = 2, however on review only one is actually a primary cancer of bone (cancer of spine). Other is a lung cancer with bone metastases to spine.
      - Primary bone cancer case was a boilermaker; lung cancer case a painter.

   d) Cancer of Brain and other CNS (SMR=1.7)

      - Number of cases = 4, however 2 appear to be misclassified here since one died of

CN8512202

EXHIBIT
tabbies 21

neurofibrosarcoma with acute pulmonary insufficiency; the other of squamous cell carcinoma, presumably with brain metastases. Of remaining 2, 1 had an underlying lymphocytic lymphoma, so whether his "malignant brain tumor" on the death certificate was a new primary or not is open to question. Only 1 appears to be a true primary malignant brain tumor.

e) Lymphosarcoma/Reticulosarcoma (SMR=1.9)

- Number of cases = 3, all properly coded
- 1 case was a shift foreman in lube A from 1952 on (rest of work history from 1935 - 1952 not available); 1 began as laborer and yardman (1936-65) and later was truck driver (1965-1973); third was a blacksmith and boilermaker.
- This category may well be worth following at Deer Park in future.

f) Hodgkin's Disease (SMR=1.5)

- Number of cases = 1 - a draftsman and utilities engineer

g) Leukemia/Aleukemia (SMR=1.7)

- Number of cases = 6, previously reviewed and of continuing concern break down as 3 AML, 1 preleukemia, 1 acute monocytic leukemia, and 1 CML.
- No particular pattern noted in employment

2. Martinez Refinery (SMR all causes 0.8 SMR=0.7)

a) Hodgkin's Disease (SMR=2.4)

- Number of cases = 1
  Confirmed case by death certificate, worked as weed cutter, barrel handler, tool room clerk, machinist helper, mechanic, and tinsmith.

b) Cancer of other Lymphatic Tissue (SMR=1.6)

- Number of cases = 3
  2 multiple myelomas (a wharfman and a pipefitter); 1 lymphoma (a laboratory analyst)

c) Diseases of Blood and Blood Forming Organs (SMR=2.8)

- Number = 2

SHELL-BISHOP-012604

1 case was a sideroblastic anemia (clerk & storekeeper); the other was actually a CLL with hemolytic anemia as terminal event (operator at Shell Point, Pittsburgh 1950-67; then utilities operator, Martinez 1967-81)

3. Norco Refinery (SMR all causes 0.7 SMR all cancer 0.8)

a) Cancer of the Brain and other CNS (SMR=3.5)

- Number of cases = 4, all confirmed by death certificate. 2 gliobastomas, 1 glioma, 1 "cancer of brain".
- 1 was welder and leadburner (1947-1973) and later an inspector (1973-81); 1 an operator in thermal cracking (1953-1958) and then a fire and safety inspector (1958-death in 1973); the third was an operator in catalytic cracking and then pyrolysis (1977-death in 1982); the fourth worked in the lab as special tester (1952-63) as an operator in catalytic cracking (1963-1973), and died while active back in lab in 1981.
- This category is probably worthy of further watching.

b) Lymphosarcoma and Reticulosarcoma (SMR=3.7)

- Number of cases = 3 - all histiocytic lymphomas. One was a machinist, one a pipefitter, and the third a purchasing analyst.
- No particular pattern emerges here.

c) Leukemia and Aleukemia (SMR=1.5)

- Number of cases = 3 - 1 AML, 1 ALL, and 1 hairy cell.
- Work histories reveal 1 financial analyst (ALL); 1 with various maintenance jobs 1945-1952, then lab tester 1952-1963, then catalytic cracker operator (1963-1974); last case. (with hairy cell), did not have work history available.
- This category worth continued watching.

d) Benign Neoplasms (SMR=3.6)

- Number of cases = 2 - 1 a "brain tumor", 1 a mesothelioma. Brain tumor began as rigger and craneman (1929-34), later was in stores and finished as buyer (1934-1963) - death certificate does not indicate whether brain tumor was benign or malignant. Mesothelioma case began as a carpenter helper (1921-1923) then was a jitney driver, helper, and fireman (1923-1926), then a gas plant operator (1926-36), then a stillman in Trumbles and a stabilizing

SHELL-BISHOP-012605

operator (1936-1945), a stillman in asphalt manufacturing (1945-1949), and finally shift foreman and operating assistant in distilling, catalytic cracking and aromatics (1949-1961).

4. Wilmington Refinery (SMR all causes 0.7 SMR all cancer 0.8)

a) Cancer of the Testis (SMR=4.6)

- Number of cases = 1; an embryonal cell carcinoma in an operator in catalytic cracking (1969-death in 1973).

b) Cancer of the Kidney (SMR=2.4)

- Number of cases = 4; all confirmed by death certificate review.
- No particular pattern in jobs noted, but this category probably worth continuing follow-up.
- Case 1 was a hypernephroma who worked as chemist at Torrance in 1946-1947 and then at Wilmington lab (1947-1965) and engineer (1965-66); Case 2 was a pipefitter helper (43-45) and asbestos installer (45-69); Case 3 a painter (1923-1927) and a gauger, pumper, treater, doctor tester in distilling from 1927-46, later an operator in distilling and thermal cracking (46-49), and finally shift foreman in alkylation (49-63); Case 4 began as a stillman in cracking (1926-1944) then became an operator in catalytic cracking (1944-49) and later shift foreman and supervisor (1949-1962).

c) Cancer of other Lymph Tissue (SMR=1.5)

- Number of cases = 3; 1 a lymphoma, 1 a myeloplastic syndrome, and 1 a multiple myeloma.
- Lymphoma case was a petroleum engineer; multiple myeloma case was a petroleum analyst; and the myel(dis)plastic syndrome was a rigger.

d) Benign Neoplasms (SMR=2.6)

- Number of cases = 2; both brain tumors - 1 described on death certificate as left frontal lobe brain tumor; the other a left parietal meningioma. The first was in compounding (1954-55), then an operator helper in catalytic cracking (55-56), then an operator in distilling (56-69) and finally a foreman (1969-75). The meningioma was a pipefitter and zone foreman (1942-1977).

SHELL-BISHOP-012606

e) Diseases of Blood and Blood Forming Organs (SMR=2.6)

- Number of cases = 2; both appear improperly coded. 1 was case of anemia and thrombocytopenia secondary to septicemia; other died of acute renal failure with an associated anemia. Former was dispatcher and field clerk (1927-1951); latter was pipefitter and zone foreman (1940-1965).

5. Wood River Refinery (SMR all causes 0.7 SMR all cancer 0.9)

a) Cancer of Eye (SMR=6.7)

- Number of cases = 1; a malignant melanoma of retina

b) Hodgkin's Disease (SMR=1.8)

- Number of cases = 2; one a clerk and later supervisor in car department, other an operator in aromatics and alkylation.

c) Leukemia/Aleukemia (SMR=2.0)

- Number of cases = 15; already under extensive study and review.

d) Cancer of other Lymphatic Tissue (SMR=1.3)

- Number of cases = 7; all lymphomas.
- 5/7 cases were either boilermakers or pipefitters, of other 2, 1 worked in refinery lab for career (1927-70); other was operating engineer on death certificate without work history available.
- This category probably worth continued follow-up.

In conclusion, this review has identified some coding errors, helped assess the relative importance one must attach to these selected SMR's, and highlighted a very few categories which bear watching in future years.

S. R. Cowles, M.D.

S. R. Cowles, M.D.

cc: R. S. Marnoy, M.D.
R. E. Joyner, M.D.

CN8512202