ANACONDA

Anaconda Reduction Dept.

May 11, 1977

Mr. Irving H. Davis
% ACGIH Publications Office
Industrial Hygiene History Committee
P.O. Box 1937
Cincinnati, Ohio 45201

Dear Mr. Davis:

Attached is the information that you requested. It was prepared by Mr. Walter Unger who has had many years experience in industrial hygiene with the Anaconda Company. If further information is necessary, I suggest that you correspond directly with him at this address:

Walter H. Unger
Environmental Engineering
The Anaconda Company
P.O. Box 27007
Tucson, Arizona 85726

Sincerely,

Scott L. Walker, Director
Industrial Health & Safety

pc: W. H. Unger

ARCF 004752

Information Request Form

1. Name of Company or Organization: THE ANACONDA COMPANY

   Address: P.O.BOX 689

   City: BUTTE, MONTANA 59701

2. Information Prepared By: WALTER H. UNGER

3. Date Industrial Hygiene Program First Organized: The Anaconda Company organized its Ventilation Department on February 1, 1918. The Industrial Hygiene phases were assigned to the Department in 1930.

4. Primary Areas of Initial Interest: Increasing ventilation air volumes through deep underground mines. Reducing dust exposure of underground miners. Reducing heat exposure of miners by cooling mine air artifically.

5. Nature of Activities: Worked closely with the U.S. Bureau of Mines (USBM) in development of friction factors for typical mine airways. Dust in air evaluations which led to standardized methods of counting dust and improved dust control measures. Developed the first dew-point approach surface cooling tower for chilling water to be used in underground air conditioning plants.

6. Significant Developments and Early Program Benefits or Accomplishments:

   Developed and used extensively a highly efficient wet impingement dust collector. Cooperatively with the USBM, established airway friction factors which are still widely used by the mining industry.

7. Names of Individuals and Titles of persons making major contributions to company industrial hygiene programs or to industrial hygiene profession:

   Mr. A.S. Richardson, Ventilation Engineer, 1916-1951.

   Mr. John W. Warren, Chief Ventilation and Industrial Hygiene Engineer (1951-1965) Director of Environmental Engineering (1965-1969)

   Mr. Frank J. Laird, Director of Environmental Engineering (1969-1975)

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8. General Information of Historical Significance:

Anaconda's interest in the health of its employees dates back to the early days of the corporation. We have in our files a series of reports which were written in 1912 by Dr. F.L. Hoffman, Chief of the Medical Department of the Prudential Life Insurance Company, after his examination of the Butte Mines and the Anaconda Company smelter at Anaconda, Montana.

The first industrial hygiene work involved measuring the exposure of miners to dust. This work was initiated in 1917 along with some sampling of mine gases for products of combustion resulting from mine fire.

The surveys led to concerted efforts to increase the volume of air in the working places. Systematic use and enforcement of wetting down of broken ore and haulageways was employed, along with moving increased air quantitites to reduce exposure to dust. With the advent of wet drilling in the late 1920's the dust within the mines was reduced dramatically. In the mid 1920's Mr. Richardson began experimenting with mine air cooling and in 1926 he received a patent on a design which incorporated cooling a liquid in a surface cooling tower of special design and sending the cool liquid underground to an airconditioning plant near the mining area, the heated liquid being in closed circuit would return to surface to be cooled. Through the years the air-conditioning systems installed underground were improved under Mr. Richardson and then Mr. Warren's supervision.

Dust control within underground mines was further advanced in the early 1930's by Anaconda's development of an effective air/water blast and mandatory use of a specificallly designed ventube end piece to sweep the heading of all contaminants. Ventubing was manufactured in Butte, Montana during the 1920's and early 1930's - canvas ducting coated with a tar compound. Sizing of ventube was standarized to match fan capacity and every heading not on the primary ventilation system required auxiliary ventilation for control of chemical/physical/particulate contaminants. The hole diameter in drill steel and bit was fixed by research to maximize dust control during drilling and not for lubrication purposes.

The Industrial Hygiene aspects of the company's smelter, refineries, and mines were also directed by the department in Butte until the mid 1960's when the individual operations and divisions became primarily responsible for their own Industrial Hygiene Program.