BEFORE THE BOARD OF HEALTH AND ENVIRONMENTAL SCIENCES
OF THE STATE OF MONTANA

In the Matter of the Petition of the Department of Health and Environmental Sciences for an Order Adopting a Sulfur Oxides Control Strategy for the Anaconda Copper Smelter at Anaconda, Montana, and requiring The Anaconda Company to Comply with the Control Strategy.	)	FINDINGS OF FACT, CONCLUSIONS OF LAW, ORDER AND NOTICE OF OPPORTUNITY FOR JUDICIAL REVIEW

FINDINGS OF FACT

After notice and hearing concerning the petition of the Department of Health and Environmental Sciences (Department) for an order adopting a Sulfur Oxides Control Strategy (Control Strategy) for the Anaconda Copper Smelter at Anaconda, Montana, and requiring The Anaconda Company (Anaconda) to comply with the Control Strategy, the Board considered the evidence and exhibits and makes the following disposition of this contested case.

1. Under the Federal Clean Air Act as amended in 1977, all states are required to designate those areas within their boundaries in which National Ambient Air Quality Standards (NAAQSs) are not being attained and maintained and to submit to the Environmental Protection Agency (EPA) by December 31, 1978, revisions to the state implementation plans (SIPs) which will provide for the attainment of NAAQSs in non-attainment areas as expeditiously as practicable, but not later than December 31, 1982.

2. On March 3, 1978, the Department designated an area near Anaconda, Montana, as a non-attainment area for the NAAQSs relating to sulfur dioxide.

3. Anaconda owns and operates a pyrometallurgical

copper smelter (smelter) for the production of anode copper which is located in the non-attainment area described above. Sulfur dioxide gas is emitted from the smelter during the copper smelting process. Such emissions are causing the NAAQSs for sulfur dioxide to be exceeded in the non-attainment area described above.

4. Dispersion modeling and other investigation and studies conducted on behalf of the Department and Anaconda establish that NAAQSs for sulfur dioxide will be attained and maintained in the non-attainment area near the smelter if Anaconda is subject to and complies at the smelter with the requirements, schedules and restrictions described in the Control Strategy, a copy of which is attached as Exhibit A, and made a part hereof.

5. The schedule set forth in the Control Strategy will result in attainment of NAAQSs in the non-attainment area described above as expeditiously as practicable, but not later than December 31, 1982.

CONCLUSIONS OF LAW

1. The applicable requirements of Sections 110 and 172 of the Federal Clean Air Act, as amended in 1977, will be met if Anaconda is required to comply with the Control Strategy.

O R D E R

Pursuant to the power conferred on this Board by Revised Codes of Montana, 1947, § 69-3904 et seq (as amended), the Board hereby adopts and orders that The Anaconda Company comply with the Sulfur Oxides Control Strategy attached as Exhibit A.

It is further ordered that the Department submit this order to the Governor with the request that he submit it, along with supporting data, to EPA as a revision to Montana's State Implementation Plan, as required by and pursuant to Section 172 of the Federal Clean Air Act, as amended in 1977.

Dated this 16 day of November 1978.

John W. Bartlett
Chairman

BOARD OF HEALTH AND ENVIRONMENTAL SCIENCES

NOTICE: You are entitled to judicial review of this order. Judicial review may be obtained by filing a petition for review within thirty (30) days from the service of this order. Judicial review is pursuant to the provisions of Section 82-4216, R.C.M. 1947.

SULFUR OXIDES CONTROL STRATEGY

ANACONDA COPPER SMELTER

1. Sulfur Dioxide Emission Controls and Limitations.

(a) Fugitive Emissions. The Anaconda Company (Anaconda) shall utilize at its copper smelter at Anaconda, Montana (smelter) good engineering practices for reducing the escape of sulfur oxides to the atmosphere, to capture sulfur oxides emissions and pass them through control equipment where feasible, and to vent sulfur oxides emissions from process and control equipment through a stack or stacks. Such practices shall consist of:

(i) Installing and operating exhaust hoods on all active matte tapholes, matte launders, slag tapholes, and slag launders;

(ii) Installing and operating primary exhaust hoods on all active converters and operating such hoods except during pouring and charging operations;

(iii) Operating and maintaining all ducts, flues, and stacks as designed and installed using good operating practice;

(iv) Operating and maintaining all furnaces and converters according to good engineering practices in order to reduce leakage of sulfur oxide gases to atmosphere under normal operating practices; and

(v) Ducting captured sulfur oxide fugitive emissions through any tall stack serving the facility.

(b) Main Stack. Anaconda shall not discharge or cause the discharge of sulfur dioxide from the main stack of its smelter into the atmosphere in excess of 11,800 pounds per hour maximum twenty-four hour average and 16,800 pounds per hour maximum six hour average as determined by the methods specified hereinafter in paragraph (4). Anaconda shall not modify its main stack or construct additional stacks through which sulfur dioxide will be emitted without a construction permit from the Department.

(c) Acid Plant Stacks. Anaconda shall not discharge or cause the discharge from the main stack of any sulfuric acid plant at the smelter sulfur dioxide in excess of 1,000 parts per million six-hour average.

2. Compliance Schedule.

(a) Anaconda shall comply with the compliance schedule specified below:

(i) July 1, 1979. Submit a final plan to the Department for meeting the requirements of paragraph (1) above. Such plan shall be subject to approval by the Department.

(ii) January 1, 1980. Let contracts or issue purchase orders for emission capture and control systems and/or process modifications.

(iii) June 1, 1980. Initiate on-site construction and/or installation of emission capture and control equipment and/or process modifications.

(iv) July 1, 1982. Complete on-site construction and/or installation of emission capture and control systems and/or process modifications.

(v) October 1, 1982. Complete start-up and shakedown operations of all emission capture and control systems and/or process modifications.

(vi) December 31, 1982. Achieve final compliance with the requirements of paragraph (1) above.

(b) Anaconda may submit in writing to the Department, proposed changes to the compliance schedule. As a minimum, any such proposed schedule change shall contain the actions specified in subparagraph (a) of this paragraph.

No such compliance schedule change may provide for final compliance with the requirements of paragraph (1) after December 31, 1982. If approved by the Department such compliance schedule change shall satisfy the compliance schedule requirements of subparagraph (a) of this paragraph. If disapproved by the Department, the requirements of subparagraph (a) of this paragraph shall apply.

(c) Anaconda shall certify to the Department within 30 days after each date in the compliance schedule whether or not the action required by such date was completed.

(d) In the event Anaconda is presently in compliance with any of the requirements of paragraph (1) above, it shall certify such compliance to the Department on or before July 1, 1979. The Department may request such supporting information as it deems necessary to determine the validity

of the certification. If such certification or any part thereof is acceptable to the Department, the requirements of subparagraph (a) of this paragraph shall not apply with respect to the requirements so certified and accepted. If such certification or any part thereof is unacceptable to the Department, Anaconda shall comply with the requirements of subparagraph (a) of this paragraph with respect to the parts of the certification the Department refused to accept.

3. Monitoring, Recordkeeping and Reporting.

(a) Anaconda shall install, calibrate, maintain and operate a measurement system for continuously monitoring sulfur dioxide emissions and gas volumetric flow rates representative of the main stack which shall take and record one measurement of sulfur dioxide concentration and gas flow in each five minute period. Anaconda shall also install a device in each acid plant for continuously measuring gas volumetric flow rates and sulfur dioxide concentrations representative of each acid plant main stack.

(b) No later than July 1, 1982, and at such other times in the future as the Department may specify, any new systems for measuring and monitoring sulfur dioxide concentrations and gas volumetric flow rates representative of the main stack installed and used pursuant to this paragraph shall be demonstrated to meet the measurement system performance specifications prescribed in Appendixes D and E to Part 52 of Chapter I, Title 40, Code of Federal Regulations. Existing systems shall be modified to meet the requirements of paragraph

(3) no later than December 31, 1979.

(c) The Department shall be notified at least 30 days in advance of the start of the field test period required in Appendixes D and E (described above) to afford the Department the opportunity to have an observer present.

(d) The sampling point for monitoring emissions representative of the main stack shall be in the duct at the centroid of the cross section if the cross sectional area is less than 4.647 m^2 (50 ft^2) or at a point no closer to the wall than 0.914 m (3 ft) if the cross section area is 4.647 m^2 (50 ft^2) or more. The monitor sample point shall be in an area of small spatial concentration gradient and shall be representative of the average concentration of the duct. The sampling point for monitoring emissions representative of acid plant main stack emissions shall be as specified by the Department.

(e) The measurement systems installed and used pursuant to this section shall be subjected to the manufacturer's recommended zero adjustment and calibration procedures at least once per 24-hour operating period unless the manufacturer(s) specifies or recommends calibration at shorter intervals, in which case such specifications or recommendations shall be followed. Records of these procedures shall be made which clearly show instrument readings before and after zero adjustment and calibration.

(f) The Department may require Anaconda to verify the accuracy of the measurement system required by paragraph (3)(a) for continuously monitoring sulfur dioxide emissions and

gas volumetric flow rates representative of the main stack by determining a six-hour average sulfur dioxide emission rate as follows:

(i) A test of the emission rate of the main stack shall be conducted while the processing units which emit gases which are vented through the stack are operating at the maximum rate at which they were operated and under such other relevant conditions as the Department shall specify based upon representative performance of the smelter units.

(ii) Concentrations of sulfur dioxide in emissions shall be determined by using Method 8 as described in Part 60 of Chapter I, Title 40, Code of Federal Regulations, modified by (1) increasing the concentration of hydrogen peroxide from 3% to at least 15% to meet the minimum sampling volume requirements of 40 cubic feet corrected to standard conditions, dry basis for each two-hour test conducted, and (2) increasing the amount of hydrogen peroxide in the impinger bottles from 200 ml. to an amount necessary to capture the total concentration of sulfur dioxide in emissions. The concentration of hydrogen peroxide and the volume used in the impinger bottles will depend upon the isokinetic sampling conditions and the sulfur dioxide concentration in the gas stream. The analytical and computational portions of Method 8 as they relate to

determination of sulfuric acid mist and sulfur trioxide as well as isokinetic sampling may be omitted from the over-all test procedure.

(iii) Three independent sets of measurements of sulfur dioxide concentrations and gas volumetric flow rates shall be conducted. Each set of measurements shall consist of three consecutive two-hour tests conducted with the minimum time between tests as may be reasonably practicable. All tests must be completed within a 72-hour period.

(iv) In using modified Method 8, traversing shall be conducted according to Method 1 as described in Part 60, Chapter I, Title 40, Code of Federal Regulations. The minimum sampling volume for each two-hour test shall be 40 cubic feet corrected to standard conditions, dry basis.

(v) The volumetric flow rate of the total effluent from the main stack shall be determined by using Method 2, as described in Part 60, Chapter I, Title 40, Code of Federal Regulations, and traversing according to Method 1 described above. Gas analysis shall be performed by using the integrated sample technique of Method 3 as described in Part 60, Chapter I, Title 40, Code of Federal Regulations. Moisture content shall be determined by use of Method 4 as described in Part 60 of Chapter I, Title 40, Code of Federal Regulations.

(vi) The gas sample shall be extracted at a rate proportional to gas velocity at the sampling point.

(vii) For each two-hour test, the sulfur dioxide emission rate representative of the main stack shall be determined by multiplying the gas volumetric flow (ft^3/hr at standard conditions, dry basis) by the sulfur dioxide concentration (lb/ft^3 at standard conditions, dry basis). The sulfur dioxide emission rate in lbs/hr is determined by calculating the arithmetic average of each set of three two-hour tests.

(g) Six-hour and twenty-four hour average sulfur dioxide emission rates for the main stack shall be calculated in accordance with paragraph (4) below, and recorded daily. Hourly acid plant main stack gas volumetric flow rates and sulfur dioxide concentrations (calculated on a six-hour rolling average), shall be recorded daily.

(h) Anaconda shall maintain a record of all measurements required by this paragraph. Measurement results shall be expressed as pounds of sulfur dioxide emitted per six-hour period and per twenty-four hour period for the main stack and as parts per million for the acid plant main stacks.

(i) Six-hour and twenty-four hour average values calculated pursuant to paragraph (4) shall be reported as of each hour for the preceding six-hour and twenty-four hour periods. Results shall be summarized monthly and shall be submitted to the

Department within 15 days after the end of each month along with a monthly summary of acid plant main stack gas volumetric flow rates and sulfur dioxide concentrations. A record of such measurements shall be retained for at least two years following the date of such measurements.

(j) The continuous monitoring, recordkeeping and reporting requirements of this paragraph shall be effective with respect to new measurement systems installed pursuant to this paragraph on July 1, 1982. Such requirements shall become effective with respect to existing measurement systems on December 31, 1979. Prior to such date Anaconda shall provide data to the Department in accordance with the terms and conditions of orders of the Board granting Anaconda variances, or renewing variances, from ARM § 16-2.14(1)-S1470(2).

4. Calculation of Emission rates

Compliance with the requirements of paragraph (1)(b) above, shall be determined by calculating six-hour and twenty-four hour emission rates, as of the end of each clock hour, in the following manner:

(a) Divide each six-hour into 6 one hour segments.

(b) Determine on a compatible basis a sulfur dioxide concentration and gas flow rate for each 5-minute period. These measurements may be obtained either by continuous integration of sulfur dioxide concentrations and gas flow rates recorded during the 60-minute period or from the arithmetic average of any number of sulfur dioxide concentrations

and gas flow readings equally spaced over the 60-minute period. In the latter case, the same number of concentration readings shall be taken in each 60-minute period and shall be similarly spaced within each 60-minute period.

(c) Calculate the arithmetic average (lbs SO_2 hr) for the six-hour and twenty-four hour averages in the following manner:

(i) Compute a weighted total for each one-hour period by multiplying the one-hour average by the number of entries used to obtain the average;

(ii) Sum the weighted totals for the preceding six and twenty-four hour periods;

(iii) Divide by the number of five-minute samples in each period.

5. Compliance with Emission Standards.

(a) Definitions.

(i) The term "excess emissions" means an emission rate which exceeds any applicable emission limitation prescribed by paragraph (1) above. The procedures for calculating emission rates for the main stack shall be as specified in paragraph (4) above.

(ii) The term "malfunction" means any sudden and unavoidable failure of air pollution control equipment or process equipment or a process to operate in a normal and usual manner. Failures caused entirely or in part by poor maintenance,

careless operation, or any other preventable upset condition or preventable equipment breakdown shall not be considered malfunctions. No failure shall be considered a malfunction unless Anaconda notifies the Department as required by subparagraph (b) of this paragraph.

(iii) The term "start-up" means the setting into operation of any air pollution control equipment or process equipment for any purpose, except routine phasing in of process equipment.

(iv) The term "shutdown" means the cessation of operation of any air pollution control equipment or process equipment for any purpose, except routine phasing out of process equipment.

(v) The term "violation" means any incident of excess emissions, except when such incident (1) is caused by malfunction or (2) occurs during start-up or shutdown when the air pollution control equipment, process equipment, or processes are maintained and operated, to the extent practicable, in a manner consistent with good practice for minimizing emissions.

(b) In the event of a malfunction Anaconda shall notify the Department as soon as practicable. The Department shall determine whether to permit the operation to continue in accordance with ARM § 16-2.14(1)-S14000(1).

(c) Anaconda shall notify the Department when the applicable emission limitations in paragraph (1) above are not met. Such notification shall be made in writing for each month in which excess emissions occur. Each monthly report shall be submitted within fifteen days following the end of each month together with the applicable monthly reports required by paragraph (3)(i) and shall include with respect to each incident of excess emissions (1) the magnitude, time and duration, (2) a description of the nature, circumstances and cause, (3) the identity of the equipment which caused such incident, (4) the steps taken to prevent, limit or remedy the incident, and (5) documentation that the incident was not caused by poor maintenance, careless operation or any other preventable condition.

(d) No incident of excess emissions shall constitute a violation of this Sulfur Oxides Control Strategy except as defined in subparagraph (a)(v) of this paragraph.