

technical data

PIONEERING IN PHYSICAL CHEMICALS

TRACE METALS
ADDENDUM #1

PLAINTIFF'S EXHIBIT

MAR-305

TRACE METALS ANALYSES OF PFIZER, MPM DIVISION PRODUCTS

In June 1972, the MPM Division published the first results of trace metal analyses on selected products in its product line (TR-167-4). The second phase of the continuing program has now been completed. This report presents data on most of the remaining products sold by the MPM Division.

The tables on the following pages present ranges of trace metal contents in parts per million. One part per million equals 0.0001 per cent. Concentrations listed as "less than" (<), indicate that the element is present below the detection limit of the analytical method, if at all. Chances are good that the element is totally absent but to be technically accurate, it is listed as less than the detection limit.

Careful analyses have been conducted over an extended period on a number of production lots to define the ranges of trace metal contents. Analyses on all products will be repeated periodically to insure the continued validity of these data.

Manganese, Magnesium, Nickel, Cobalt, Strontium, Chromium, Zinc and Copper were determined by standard atomic absorption spectrophotometry. Lead and Cadmium were done by atomic absorption after quantitatively removing iron from the acidified solution with isoamyl acetate.

Mercury was determined by flameless atomic absorption techniques. Arsenic was done colorimetrically using a UV-VIS spectrophotometer for measuring absorption. In the absence of Arsenic, Antimony was measured by this procedure. Where Arsenic interfered, Antimony was detected using special X-ray fluorescence spectroscopy. Selenium was precipitated from solution as elemental Se, recovered quantitatively on millipore filters and measured by X-ray fluorescence.

All other elements were measured by X-ray fluorescence after standardizing the equipment by adding known quantities of each element to each product being analyzed and determining optimum instrumental conditions for each element.

East St. Louis Copperas Red Pure Oxides were examined in this series of analyses and found to fall within the limits established for Indian Red Copperas Oxides in the previously published report.

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	California Soft Tale (CP Series)	Bleached Barytes (No. 1 and Sparmite)	Eastern Dolomitic Limestone (FGD, PD, TP, etc.,)	Van Dyke Brown (BV-88)
Manganese	100-120	<10	100-150	100-300
Magnesium	Major	5-15	Major	3000-5000
Chromium	100-250	<20	<20	<20
Zinc	100-150	10-50	15-30	10-30
Copper	<10	<10	75-125	5-15
Strontium	50-100	200-300	50-150	40-60
Arsenic	<1	<1	<1	<1
Nickel	<20	<20	75-150	20-30
Cobalt	100-150	<50	<10	30-50
Antimony	<20	<20	<20	<25
Tin	<10	<10	<10	<10
Barium (Insoluble)	200-400	Major	10-40	500-1000
Barium (Soluble)	Not Present	Not Present	Not Present	Not Present
Tellurium	<10	<10	<10	<10
Molybdenum	<20	<20	<20	<20
Cadmium	<5	<5	40.1	<10
Vanadium	<20	*	<5-75	*
Bismuth	<50	<50	<50	<50
Selenium	<15	<15	<15	<15
Lead	5-8	200-600	<5	20-75
Thallium	<50	<50	<50	<25
Mercury	<0.05	<0.05	<0.1	0.1-0.2
Silver	<10	<10	<10	<10

*Spectral interference - unable to measure.