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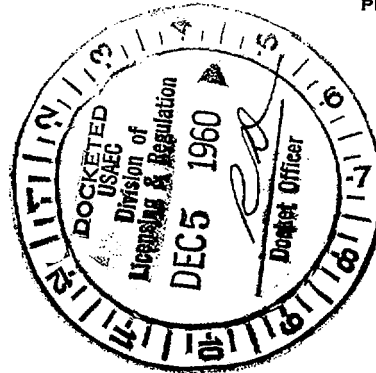
ENGELHARD INDUSTRIES, INC.

File 4

D. E. MAKEPEACE DIVISION

PINE & DUNHAM STREETS
ATTLEBORO, MASS.
ATTLEBORO 1-0090

November 30, 1960



U.S. Atomic Energy Commission
Division of Licensing and Regulation
Washington 25, D. C.

Attention: J. C. Delaney, Chief
Nuclear Materials Branch

Gentlemen:

With reference to your letter of November 21, 1960, we would like to offer the following additional information concerning our in-plant and environmental air survey programs:

Our in-plant air survey program consists of routinely sampling a minimum of two work areas daily plus frequent additional sampling at certain operations which require special attention. These latter operations are primarily ones which would have a tendency to spread small radioactive particles into the atmosphere and include such equipment as belt sanders, centerless grinders, and abrasive cut off wheels.

The air samples which are taken are of the general air type and are normally taken for periods of at least 60 minutes. The sampling equipment is set up on portable stands at the approximate breathing zone level of the worker and as close to the worker as practical. Our sampling equipment consists of seven samplers of which two are battery operated and the balance operated by AC lines. Three samplers are composed of Gast air pumps which are fitted with sampling heads suitable for holding 1" diameter Millipore filters and Brooks rotameters to measure air flow. They have a volume capacity of 20 liters per minute. The remainder of the samplers are self-contained portable Gelman AC-5 Bantam units equipped with filter holders capable of holding 1" diameter Millipore filters. These units have a volume capacity of 35 liters per minute and two of these are battery operated.

The majority of our air surveys are made for a period of 60 minutes with a flow rate of 20 liters per minute. After sampling, the filters are removed and placed in cellophane envelopes with the proper identification such as work area, sampling time and flow rate. The filters are then sent to the counting room where they are held for a period of 24 hours to allow for Radon

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November 30, 1960

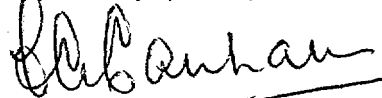
decay. After this period of time has elapsed, they are Alpha counted on Nuclear Measurements Corporation PC-2 gas proportional counters for 20 minutes. The results are calculated to the dpm per sample and then converted to the dpm per cubic meter of air using the volume of air per sample. These results are then converted to microcuries per milliliter of air to conform with provisions stated in 10 CFR 20 section 20.401 (c).

In calculating the exposures of personnel to airborne radioactive material, use is made of Table I, Appendix B, of 10 CFR 20. This lists permissible concentrations of 5×10^{-11} uc/ml, for uranium. Since this figure is based on a 40 hour per week exposure, we adhere to this limiting value for all dust generating or other operations in order to assure that no employee is over-exposed. In the event that certain surveys reveal concentrations in excess of specified limits, the exposure time of the employee is reduced until adequate ventilation and shielding is obtained to reduce concentrations to permissible levels.

At the present time, airborne radioactive material may leave restricted areas from two points, the incinerator stack, and the ventilation system stacks. The procedure which is used to determine the concentration of radioactive material in stack effluents is to attach air sampling equipment to the ventilation stack at a point after the absolute filters and analyze these samples as above. In addition to stack sampling, downwind samples are taken when incinerating radioactive material. Permissible concentrations are derived from Table II, Column I, Appendix B of 10 CFR 20 averaged over periods not greater than one year.

We trust that the above information will prove satisfactory insofar as our air sampling program is concerned. Any comments or suggestions will be welcomed and further information will be supplied upon request.

Very truly yours,



C. A. Canham
Plant Manager

CAC:dc