



FATS AND PROTEINS RESEARCH FOUNDATION, INC.

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THE DIRECTOR'S DIGEST
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IDENTIFICATION OF RENDERING ODORS

With the present national emphasis on environmental pollution of all kinds it is perhaps significant that the rendering, meat packing and related industries have been concerned with the problem of odor control for many years. Several research projects on odor control have been supported by NRA and more recently by FPRF. The information developed by this research has been helpful, but it has become obvious that effective, economical systems for controlling odorous emissions from rendering plants cannot be designed without basic information on the chemical nature of the odorous compounds. FPRF is attempting to obtain this information in a research project at the Illinois Institute of Technology Research Institute (IITRI) under the direction of Dr. Andrew Dravnieks, an internationally known authority on odor separation and identification.

Using the most modern and sensitive techniques for the isolation of odorous compounds, IITRI workers have separated more than sixty odorous compounds from air samples obtained in rendering plants. As expected the greatest number of odorous compounds in highest concentration were obtained from air in the cooker and press areas.

Of the large number of odor-relevant compounds separated, less than a dozen had distinctly unpleasant or "foul" odors at the concentrations observed. These same odorous compounds were present in the press areas of all plants investigated so far. However they appear to be present in different proportions in different plants (Table 1).

Table 1. Concentration of Two Odor Components in Air in Two Plants

<u>Component</u>	<u>Kovats Index</u>	<u>% of Total Odor Components</u>	
		<u>Plant A</u>	<u>Plant B</u>
I	960	6-10	51-57
II	1060	39-48	5-7

It has been determined also that the odorous compounds isolated from plant air can be obtained from the vapors produced when samples of pressed or unpressed cracklings are heated in the laboratory. This finding, if confirmed by samples from other plants, should simplify greatly the sampling problem.

The data obtained so far suggest that the same basic odor "pattern" is present in the air of all rendering plants. If additional research supports this, it may well simplify the solution to the problem of odor control in the rendering process.

Several organizations that are developing techniques and equipment for odor control in the rendering industry are very interested in the results of this current FPRF study. As soon as the major odor components are definitely identified chemically by IITRI, these compounds can be used to test the effectiveness of the various control systems and appropriate modifications made in the equipment or method of operation.

SALMONELLA SENSITIVITY TO MOISTURE AND TEMPERATURE

Results from several research studies supported by FPRF have indicated that salmonellae in meat and bone meal are destroyed by holding at relatively low temperatures if the water activity level is in a critical range (moisture content of 10-15%). This has been confirmed in a recent study made by Dr. G. H. Snoeyenbos and his associates (supported in part by a grant from FPRF) and reported in Poultry Science, September, 1969. A reprint of the article is enclosed. The data show that Salmonella 775W population in meat and bone meal containing 15% moisture was reduced to 0.00001% by holding for three days at 50°C. (122°F.). At lower temperatures and/or moisture levels the level of destruction was much less significant.