WHAT TO LOOK FOR IN BAKERY SANITATION APPRAISAL *

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BAKERY sanitation appraisal involves the same inspection factors that are the concern of any sanitary inspector. Therefore, in speaking to you on the subject of the title of this paper namely “What to Look for in a Bakery Sanitation Appraisal” it is felt that the subject is essentially how to make a modern sanitation inspection of any food plant in the light of the appraisal factors to be discussed in detail.

What are the appraisal factors of any food plant sanitation inspection? They depend, of course, upon the objectives. Food plant sanitation in these days has come to mean two things: (1) regulation of personnel practices to prevent the spread of disease through consumption of the food produced in a plant, and (2) elimination of practices and conditions in a plant that might lead to adulteration of the foods produced therein with aesthetically repulsive extraneous matter. Today both of these factors are of primary importance.

While we do not wish to lose sight of the dominant role of food plant sanitation in aiding in the prevention of the spread of disease, we cannot ignore at any time the fact that the consuming public expects of all concerned with food plant manufacture, in their personal conduct, in their choice of ingredients, and in their handling of such to conduct themselves so that the finished products of the plant will be free from the debris of insect infestation, rodent infestation, fungus growth, and repulsive bacterial growths not associated with disease.

By far the greater majority of those listening to this paper are concerned with the enforcement of what might be called public health requirements in food plants. Because of this interest you have primarily been concerned with the regulation of human behavior factors within the plant in order to minimize the possibility of disease spreading. The principal mechanism through which this has been done has been the setting up of state and local regulations on total bacterial counts, and by the presence or absence of specific organisms such as Escherichia coli in the products at consumer level.

In making sanitary inspections you have been concerned with enforcement regulations drawn up with a view to minimizing the possibilities for the development of high bacterial counts in the finished products and in the possible contamination with E. coli.

From an industry viewpoint, however, we have found that interest in food plant sanitation must not only include these factors, but also that of the problems of adulteration with extraneous matter. The two factors are closely interrelated after all for in one respect a dirty plant is a dirty plant in all respects. One that contains many opportunities for development of bacterial contamination will undoubtedly contain sources for the development of insect and rodent infestation. But conversely it is quite possible to have a plant appearing outwardly to be bacteriologically sound and at the same time have conditions permitting a degree of insect or rodent infestation to

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occur in a hidden way which will lead to adulteration with extraneous matter so that prosecution under food and drug laws might well result.

Many of those listening to this paper are also responsible for enforcing local food and drug laws and they will bear me out in this statement.

What is desirable, therefore, in making an industry sanitation appraisal or inspection for sanitation in food plant is a procedure which will supply the inspector with a sound basis for analysis as to how close the plant being inspected actually comes to compliance with both food and drug laws involving adulteration with extraneous matter and public health laws.

Within the baking industry we feel that we have worked out such an inspection appraisal system together with a program to meet it. When the remedial program falls down, we do not feel it is the fault of the program itself but of the personnel applying it who may be limited either by lack of knowledge or lack of sufficient funds to enable them to carry it out adequately. This feeling has been amply supported by revisits to firms after the program has been properly applied.

We try to view the problem on an overall level without making a sharp distinction between the two viewpoints. In so doing, we set up a bakery inspection into the following eight categories:

1. Evidences of insect infestation in equipment and ingredients.
2. Evidence of structural insect infestation.
3. Evidence of rodent infestation.
5. Occurrence of structural harborage for insects and rodents and maintenance faults both of building and equipment.
6. An analysis of the housekeeping practices.
7. Degree of cleanliness maintained normally of equipment and utensils.
8. Personnel hygiene practices.

It is our feeling that these categories cover the field quite well. Depending upon the objectives of the inspection each of them can be given different weighted value when presenting a total picture. In fact it is recognized by us that from time to time our objectives will change so that we ourselves will change the weight to be given each of these factors. At the present time the baking industry is tremendously concerned with compliance of all bakeries with adulteration laws insofar as their sanitation goes. This means, therefore, that we must give this phase at least equal consideration with compliance with public health regulations. Therefore, we have weighted those categories concerned with adulteration so as to equalize those concerned with public health practices within the plant.

Let us consider each of the categories individually. Going back to number one—evidence of insect infestation in equipment and ingredients—the inspector in order to detect evidence of insect infestation must not examine a piece of equipment nor a stack of ingredients casually, but actually be present when the equipment is taken apart and cleaned piece by piece. As a matter of fact many occasions have shown that even plant personnel may not know how to disassemble many pieces of equipment requiring inspection, so our inspector must, on his own, figure out how this can be done and show the plant the procedure they must follow in the future.

Bakeries have always endeavored to keep their plants as clean looking as possible. This means that the outsides of machinery have been polished and scrubbed wherever possible but all too often there has been a lack of understanding of what might be underneath the first layer of covering that is taken off when the machine is disassembled, and the further regions deep down underneath. Ingredients are examined not by looking over the stack but by actually taking out material quantities of flour and sifting it. If there is a strong suspicion that stored flour may contain a certain small degree of insect infestation our inspectors require that
as many as a square root of the bags be sifted by individual whole bags to determine how many live adult insects or larvae might be found. In all cases our men are equipped with hand sieves, hand lenses, and other equipment which will enable them to go as far as they can in the field, to determine the degree of infestation of ingredients. Experience in the past has shown that inspectors too often have gone by appearances on the outside of flour bags. Examination of the ears of the bag has represented the extent to which they went in getting into the interior.

Evidence of structural infestation means a thorough foot by foot examination of the structure of the plant itself to determine whether or not there is insect infestation living within the building. In a sense these two categories represent, first, inspection for evidence of insect infestation by ingredient infesting insects primarily; in the second case, evidence of infestation by structurally infesting insects. Examples of the first are the confused flour beetle, a true "bran bug," and of the second, are the cockroach and the silverfish which live hidden often in the cracks and crevices of the walls. A complicating factor, of course, is that structurally a plant can become thoroughly infested with ingredient type infestation with, say, the confused flour beetle as well as with the so called household type insects.

Evidence of rodent infestation means that the inspector at the time of surveying the plant for structural insect infestation also looks for signs of rodent infestation. In the case of bakeries, these are chiefly the avenues of entry, droppings, tracks, rodent run marks, and gnawings in the structure or the bags or of containers of ingredients.

Experience has shown that in fighting this evidence one can even gage the extent of infestation for in a very light infestation very little evidence is found except in the form of a few tracks in the flour dust that usually accumulates on the skids in which flour is stored or perhaps in the dust developed underneath the skids. Then as the infestation gets heavier pellets are found occasionally on the bags themselves or in adjacent places where mice may have been stopping to feed. They tend to leave droppings as they feed or stand before their holes looking for evidence of safety before traveling further into the room. One does not find gnawings or evidence of rodent runs unless the infestation is very heavy.

Storage Practices are surveyed carefully to see whether or not the firm understands how to store its ingredients, its unused equipment, and its unused supplies in such a way as to minimize the development of rodent and insect infestation. Here again thorough consideration is given to adequate storage under refrigeration of perishable products and also methods of removal of perishable products from storage. For example, it has been found that a common practice in some bakeries is to take out cans of frozen eggs and leave them to thaw for a long period of time in the open air. By the time the interior of the can is thawed some of the eggs adjacent to the can side may have spoiled. Other factors involved in the study of storage practices are whether or not proper rotation is followed with ingredients as they are received so that the oldest is used first and whether or not intermediate containers are kept covered, and whether or not the plant follows a thorough inspection program upon receipt of raw materials to make sure that no infestation is present when received to prevent it from being brought into the plant.

During the course of the search for evidences of structural insect and rodent infestation a survey is also made of the occurrence of structural harborage and maintenance faults that might lead to the development of insect infestation or rodent infestation. Coming under this category are a study of the adequacy of the rodent-proofing problem of the screening of the plant, the elimination of low walls and ceilings.
wherever possible. Unless the plant is made thoroughly rodent-proof by the removal of all hollow spaces, these must be thoroughly sealed to make sure that they cannot be utilized. There are, of course, many interior practices such as methods of setting up equipment which may also develop insect and rodent harborage. These are not strictly structural but are given consideration in this category.

Good housekeeping practices are of primary consideration, for given a well rodent-proofed, well screened plant, if proper storage facilities are practiced there is no excuse for the development of insect or rodent infestation unless poor housekeeping is followed. In a bakery we are constantly faced with the problem of deposits of flour dust developing over a week or two weeks time everywhere within the plant. These must be routinely cleaned up. The only sure way of doing so is by use of an industrial-type vacuum cleaner.

Along with the flour dust it must be recognized that there may be deposited a small number of insect eggs which if left undisturbed will develop into an adult population within the course of a few weeks. This means that no matter how well a plant is insect-proofed, both by screening and by inspection of ingredients for evidence of live infestation, there is always a latent or potential infestation in every bakery due to the possibility of the hatching of these eggs. It is good housekeeping practices that keep this and casual interior harborage at a minimum.

Cleaning of equipment. This category is a very serious one to bakeries generally. In the past they have kept the outsides of their equipment thoroughly cleaned, at least to appearances. They have been handicapped in cleaning the interiors of their equipment by virtue of the fact that most bakery equipment has been so designed that it is impossible to disassemble it without extra effort for cleaning. At the present time bakers, bakery equipment manufacturers, and the industry sanitation advisors are working closely together to develop better sanitation design for bakery equipment. Our ideas are quite similar to yours in your 3A program. It is believed that we have very much in common, and in cooperation with Dr. Parfitt, who is chairman of your program, it is our thought that we can share much valuable information in this regard. Most of you are familiar with this program so there is no need for it to be discussed further here.

Personnel Practices. It cannot be denied that personal hygiene practices in the bakery are the keynote to prevention of disease by consumption of bakery products, in fact not only for disease but also in many food-poisoning outbreaks. It is necessary for an inspector to make sure that adequate facilities are provided for employees to keep themselves clean. Care must be taken to ascertain whether or not procedures are set up to keep employees informed as to their obligations in reporting individual sicknesses.

SUMMARY

In summarizing our appraisal of the bakery sanitation program the keynote is the concept that 80 percent of bakery sanitation is concerned with good housekeeping and adequate maintenance of the plant with a view to good sanitation as the final outcome. The remaining 20 percent of effort to be applied to bakery sanitation is applied to what we call the preventive program. This involves the use of rodent-trapping programs and the use of insecticides notably of the residual deposit type for the purpose of catching what we have termed often "casual invaders of a rodent or insect character".

It has been our experience that in the best of bakeries a noticable infestation of either rodents or insects will be built up by casual invaders multiplying in some hidden spot not disclosed by ordinary surveillance within the plant so that by the time it is so disclosed
there is a heavy infestation requiring a great deal of effort to eliminate.

The preventive sanitation program properly applied automatically catches casual invaders as they attack the plant.

We feel that there must be maintained in every bakery a thorough educational program ranging from general management down to the lowliest porter. Each individual working in the bakery must be trained to understand the role of his job in the sanitation picture. This is necessary because it is our belief that if he understands the things that he can do to destroy good sanitation he will not be so prone to do them. No one likes to work in an insanitary plant. It has often been said that man fouls his own nest worst of all. If this is true, we believe that it is because of ignorance of the factors involved not because of an innate desire to do so. An educational program for every employee in the plant is a must to go along with the application of preventive measures involving infestation and the establishment of sound housekeeping.

Pest Control

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carefully selected from over 200 applicants. You see, we no longer believe that any one can be a pest control operator.

In some cases regarding pest control, we do not have the answer. I am not sure wherein the responsibility lies. A few provocative thoughts might serve to illustrate. Have you ever thought of how beer and beverage cases spread roaches? What can be done about this situation? What happens to badly infested food that is fumigated? Sure, the insects are dead, but is the material usable as human food? Sometimes I wonder whether some phases of pest control and sanitation are not working backwards.

In closing, I want to emphasize the thought that competent pest control is a vital link in food sanitation. Good sanitation itself does a large part in pest control, but where food is involved, some form of good pest control is also necessary. I hope the day will not be too distant, when through the cooperation of all concerned, we can say PESTS ARE UNDER CONTROL IN THE FOOD INDUSTRY.

Vermont Dairy Plant Operators' Conference

Vermont's Twenty-ninth Annual Conference for Dairy Plant Operators and Milk Distributors, October 25 and 26, is offered by the Dairy Department of the University of Vermont and State Agricultural College, Burlington, Vermont, at which O. E. Reed, Chief, Bureau of Dairy Industry will discuss the "New Developments in Dairy Research".

The Milk Plant Operations section will have papers concerning "Maintenance and Operation of Boilers", "Maintenance and Operation of Refrigeration Systems", and a discussion of "Reflective Insulation".