points to sorting and storage areas, sorting methods and organization, cleanup and size, location, and cost of these areas. Data will be collected on the volume, number and types of returnable containers handled in each of the four stores including the number of vendors and frequency of collection. Data on labor, time, space, and equipment costs associated with the handling of returnable containers also will be obtained or developed. Any problems associated with existing returnable container handling practices will be identified and evaluated. Based on the research findings, recommendations for improving the existing methods of handling returnables in retail food stores will be developed. These will be instituted where deemed feasible, appropriate and acceptable by store management. The economic impact of utilizing improved handling procedures for returnable containers will then be evaluated.

SUMMARY

The findings of this research should provide retail food store operators with a better understanding of the costs associated with implementing improved sanitation management practices. As sanitation management practices improve and become more efficient in retail food stores, consumers should benefit from a reduction in food-borne illnesses attributable to retail food store operations and consequently receive a more wholesome and safe food supply. In addition, the findings of this study should enable retail food stores to increase their economic and operating efficiency in terms of handling returnable bottles and containers. Finally, the cost data developed should provide industry personnel and legislators with a better understanding of the economic impact the Oregon Bottle Deposit Law has had at the retail food store level.

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COMMUNICATIONS AND LEADERSHIP CREDIBILITY

by
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How can the Food Industry increase profits....by bridging the gap between their human resources through effective communications. Bridging the gap in this framework refers to removal of work barriers that exist in the work climate. By removing these barriers, management can create the "right climate" for maximum employee productivity through "self-motivation" for greater net profits.

Removal of these barriers can be removed by focusing more attention to fundamentals and communications. Identifying frustrating barriers can easily be done by conducting an employee opinion survey. By involving employees, you are practicing participation management, and if management follows through on removing these work barriers, they will be increasing their leadership credibility.

At a time when leadership is lacking, a true opportunity exists to strengthen this area with employees of the food industry. Labor Unions, Teacher Unions, and the Government have dampened their credibility throughout the nation and now is the time to make inroads and....more profits.

Out of 4000 employees surveyed in the food industry, they indicate that management is only 66% effective in the communications area. This is followed by 67% effective in directing them and 69% effective in controlling and evaluating activities. These figures are further substantiated by the fact that 51% of the employees indicate that too many employees waste time and 60% indicate they do not understand the method of judging their performance. This tends to indicate that employees seek their own levels of productivity - shouldn't management establish their levels?

What Fundamentals and Communications Are Important to Increase Leadership Credibility:

A - Sound Selection Techniques
B - Strong First Week Molding
C - Communications
1. Duties and Responsibilities
2. Yardsticks and Standards
3. Employee Performance Evaluations
4. Positive Employee Counseling
5. Employee Handbook
6. Bulletin Board Communications
7. Store Meetings
8. Department Manager Weekly Meeting
9. Top Management Luncheon
10. Top Management Hotline
11. Complaint Ladder

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COMPARING SOLID WASTE MANAGEMENT SYSTEMS FOR SUPERMARKETS

by
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A recently completed study of solid waste management practices in ten supermarkets found that these stores generate and accumulate between 3.4 and 11.4 tons of solid waste per week. This consists of cardboard boxes, meat and vegetable trimmings, empty wooden produce boxes, and miscellaneous other types of waste. These wastes must be handled efficiently, following good sanitation practices, to minimize adverse impact on the receipt, storage and sale of foodstuffs. Much of the wastes generated at retail food stores are recyclable and/or reusable, but often wasted. Resource recovery efforts by food stores in many areas of the country have not been adopted due to such problems as lack of space, undeveloped markets for recycled materials, and undocumented cost data.

Recognizing the diversity of problems and the lack of information pertinent to retail food store solid waste management, the Agricultural Research Service of the United States Department of Agriculture funded this in-depth project. The study assesses current solid waste management practices and formulates alternative solid waste management systems applicable for use in retail food stores. Five representative retail food stores with average weekly sales of $43,000 and five supermarkets with average weekly sales of $121,000 were selected for the study.

Quantitatively, recyclable paper and cardboard comprised between 41-68% of total waste quantities generated during the survey. There was a substantial difference in the quantity of this waste type

generated at the California stores surveyed versus the eastern stores, with the latter accumulating between 36 and 81 lbs. more cardboard per $1,000 of gross sales. The average total solid waste quantity generated in the $40,000 stores was 3.91 tons per week or 169 lbs. per $1,000 of gross sales. In the $100,000 stores the total waste quantities averaged 9.87 tons per week or 180 lbs. per $1,000 of gross sales.

The waste management systems studied are designated in terms of the subsystem used for processing recyclable cardboard. Two stores employed stationary compactor systems, three used baler systems, three used incinerator systems, one used a roll-off container system and one employed a pre-processing system. Detailed cost analyses were made of the existing waste management systems in each store. This information together with waste hauling costs, space costs, and revenue received from recyclable materials was assembled to ascertain total costs for each system studied.

It became clearly apparent that each store has unique characteristics which affect waste management system costs, and that because of the small sample size, care should be exercised in comparing costs between stores. An illustration of this is provided by looking at the three stores that use incinerator waste management systems.

The net cost per ton in the two high volume stores utilizing incinerator systems were $27.60 and $28.10 and made them the lowest cost systems in the study. At the same time, the $83.80 net cost per ton in the low volume store made this operation the highest cost system studied. This variation results from economies of scale and lower labor costs in the larger stores.

Each of the baler systems in the study used single stroke vertical balers that were used to process recyclable cardboard and paper in 400-650 lb. bales. The waste management costs at stores employing the baler system averaged $43.70 per ton of waste. During the survey period the bales had an average market value of $20-$23 per ton.

Two stores use stationary compaction systems. A high volume store used a stationary compactor for processing recyclable cardboard and paper into a container which was then collected by a paper stock dealer. A low volume store used the compactor to process all solid wastes with the exception of meat waste into a 40 cubic yard container. The net cost to handle the 10.3 tons of solid waste generated in the high volume store was $48.00 per ton of waste generated. The only revenue received was from the sale of meat wastes as the compacted cardboard was picked up at no cost in exchange for the salvage material by a paper stock dealer. The low volume store that combined all wastes in the compactor had a weekly cost of $57.50 per ton based on the 4.26 tons of waste processed.

The major system component for the roll-off container system consists of a 40 cubic yard open bin for receipt of recyclable cardboard boxes and paper. When full, the container was removed and emptied by a paper stock dealer at no cost to the store. The cost to handle the 6.93 tons of solid waste was $61.60 per ton, which was relatively high when compared to the other stores.

The last system was the preprocessing system where the store bundled cardboard for transportation to the chain's central processing facility where it was compressed into 1,300 - 1,500 lb. bales. The cost of solid waste management averaged $38.90 per ton of waste.

The next question is which system should be selected. A procedure was developed to evaluate alternative waste management systems and applied to two of the study stores. Selection criteria for the stores included geographic location, sales volume, existing waste management system, economics, and environmental features. Store A is a high volume store, located on the west coast and utilizing the roll-off container system. This

system had relatively high costs compared with the other systems studied and received a lower than average rating in ecology and sanitation. Store B is an average volume store located on the east coast and uses incineration as its primary waste management method. It is a costly system for that store, and rated lower in ecology and sanitation.

The first step in the evaluation procedure is to compile a list of the possible candidate waste management systems that might be applicable for a given store. The list must be assessed with a knowledge of local conditions pertaining to pollution control requirements, climate factors, store requirements, and salvage market availability. This screening narrowed the alternatives to three candidate systems for each store in addition to the one presently in use. These are: (1) stationary compaction for recyclable cardboard and paper; (2) stationary compaction for combined waste, and (3) baling systems. The incinerator was eliminated as a candidate for store A because of strict air pollution standards in California. The roll-off container system was excluded from store B due to climate conditions and a reluctance of paper stock dealers to accept loose cardboard.

Next, a data base must be developed that includes a determination of solid waste types, quantities, and generation rates. A detailed assessment of local salvage conditions for recyclable cardboard and paper should be made. Prices paid for these materials by paper stock dealers are subject to cyclic market conditions and vary with the extent of material preparation by the store. In most metropolitan areas there are rendering companies available to collect meat bones and fat from a store and most will pay for the material. Pickups should be made at least three times each week, depending on meat waste volume, to minimize storage requirements, and sanitation problems.

Equipment needs for the different systems must be assessed and costs estimated. In addition to purchase/least costs, the estimated installation (if any), and maintenance and utility costs should be defined. Space requirements and related costs for waste handling, processing and storage represented from 2-5% of total system costs in the surveyed stores.

Direct and indirect labor costs and times must be carefully determined since between 70 and 90% of waste management costs were attributable to labor costs in the surveyed stores. The actual labor hours and labor rates incurred by stores A and B provided the basis for cost calculations for these stores. The total store cost is the sum of all cost elements and represents the total cost to the store for waste management excluding revenue credits derived from the sale of recyclable waste materials.

Compared to the existing roll-off container system at store A, costs for alternative waste management systems ranged from a weekly savings of $3.30 per ton for the baler system to an increase cost of $13.00 per ton for the stationary compactor for combined wastes. On an annual basis, the cost reduction for the baler system computes to a saving of $1,200. A baler would pay for itself at store A in about 3½ years.

When compared to the existing incinerator system at store B, each alternative system offered a potential weekly savings. The savings ranged from 80¢ per ton for the stationary compactor system for combined wastes to $19.10 per ton for the baler system. The potential cost savings of the baler system equates to an annual savings of over $4,000 for store B.

Based on the economic and ecological analyses, the baler system was determined to be the best and least costly waste management system for stores A and B. It should be re-emphasized that each store and location has unique characteristics that make some waste management systems more suitable than others, and a detailed study should be conducted before any system is installed.

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