MILK: DOES IT MEASURE UP?

A Report on the Accuracy of Net Content Labeling of Milk and Other Products

A REPORT BY THE STAFF OF THE FEDERAL TRADE COMMISSION, FOOD AND CONSUMER SERVICE OF THE U.S. DEPARTMENT OF AGRICULTURE, OFFICE OF WEIGHTS AND MEASURES OF THE NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY, AND OFFICE OF FOOD LABELING OF THE U.S. FOOD AND DRUG ADMINISTRATION

BASED ON INSPECTIONS BY WEIGHTS AND MEASURES OFFICES IN THE STATES OF ALABAMA, CALIFORNIA, DELAWARE, FLORIDA, IOWA, KANSAS, LOUISIANA, MARYLAND, MASSACHUSETTS, MINNESOTA, MISSISSIPPI, MONTANA, NEW YORK, OKLAHOMA, TENNESSEE, TEXAS, UTAH, WASHINGTON, WEST VIRGINIA, AND WISCONSIN

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Contributors to this Report

- Bureaus of Consumer Protection and Economics, Federal Trade Commission *
- Food and Consumer Service, U.S. Department of Agriculture
- Office of Weights and Measures, National Institute of Standards and Technology
- Office of Food Labeling, U.S. Food and Drug Administration
- Weights and measures offices in the following twenty states:

  Alabama, California, Delaware, Florida, Iowa, Kansas, Louisiana, Maryland, Massachusetts, Minnesota, Mississippi, Montana, New York, Oklahoma, Tennessee, Texas, Utah, Washington, West Virginia, and Wisconsin

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Executive Summary

Each year, over six billion gallons of fluid milk are sold in the United States. State and local reports of short-filling in packages of milk served in schools or sold in retail stores led to this joint federal/state study to examine the accuracy of net content labeling of milk, and to a lesser extent, other dairy products (such as yogurt and cottage cheese) and juice. This study was conducted by the staff of the Federal Trade Commission, Food and Consumer Service at the U.S. Department of Agriculture, the Office of Weights and Measures at the National Institute of Standards and Technology in the Department of Commerce, and the Office of Food Labeling at the U.S. Food and Drug Administration in coordination with state and local weights and measures offices.

For this study, twenty states, using an inspection procedure developed by the National Conference on Weights and Measures, conducted over 1600 inspections of milk, other dairy products and juice. Each inspection involved testing a group of packages referred to as the "inspection lot," which consists of packages of the same product, in the same size, with the same label, from the same packer and with the same expiration date. These inspections took place at 512 locations. At many of the inspection sites, testing of multiple inspection lots took place. For example, in a single retail store, inspection lots of whole milk, 2% milk, skim milk and cottage cheese may have been tested. For an inspection lot to be approved, the quantity of contents of packaged goods must meet two requirements under the testing protocol used. First, the average quantity of contents of packages in the lot must equal or exceed the quantity printed on the label. Second, individual packages may not be under-filled by an unreasonable amount, as defined in the testing protocol.

Overall, the inspections revealed widespread problems with short-filling of milk, other dairy products and juice. Just over 40% of the 1638 inspection lots failed. Of the 858 lots of milk and juice inspected at schools, universities and hospitals, almost one-half failed inspection. Of the 780 lots of milk and dairy products inspected in retail stores, packaging plants and dairies, almost one-third failed inspection. Results of inspections varied widely from state to state and from packager to packager. The results of this study cannot be statistically projected to the entire country, but do strongly indicate widespread problems with under-filling of milk, other dairy products, and juice.

When inspection lots of milk and other products were rejected, the average amount of shortage per package ranged from less than 1% to 6% or more. Although these shortages represent only a small amount per individual package of milk or juice, the aggregate shortages represent a substantial amount of product over time. This causes economic losses to consumers and major purchasers, such as school districts, hospitals and universities. Further, this short-filling affects the milk and juice served with school breakfasts and lunches. In addition, retailers, wholesalers and dairies experience business disruptions and sales losses when short-filled products are removed from sale by government inspectors. Furthermore, injury to competition may result from inequities in

the marketplace caused by short-filling of packages by some industry members.

This study shows that compliance with net content labeling requirements is in need of improvement. Although compliance levels were very high at many dairies and packagers included in this study, compliance levels at other facilities were poor or mixed. The study results suggest that inadequate quality control in the packaging plants and a lack of strict oversight by manufacturers and distributors is the cause of many short-filling problems. This study also indicates that active oversight by state and local weights and measures offices can help increase compliance with net content labeling requirements. State and local officials note, however, that resource constraints have limited their ability to maintain consistent oversight in this area.

A major goal of this joint federal/state project is to inform industry of the problems that exist and to provide information that will enable industry members to examine and, if necessary, reform their packaging practices. The government participants in this study are hopeful that increased public attention to the problem of short-filling will lead dairies, producers and packers to examine and reform their packaging processes voluntarily. Through business education efforts and warnings, government agencies will work with dairies and packagers to correct any problems found. Packagers that, in the future, fail to pay sufficient attention to their manufacturing processes run the risk of government enforcement actions with the possibility of fines, exclusions from government contracts, and government mandates to change their practices. Federal, state and local officials plan to continue to coordinate their efforts to monitor the accuracy of net content labeling of dairy products and juice, as well as other foods.

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Introduction

In 1996, the dairy industry produced over six billion gallons of fluid milk. Dairy producers' revenues from sales of fluid milk exceeded $8 billion. Recently, federal officials received scattered reports from state and local officials and several media sources of possible short-filling of milk sold in retail stores or served in schools.[(1)] To examine this issue more comprehensively, the staff of the Federal Trade Commission (FTC) coordinated a project jointly with the Office of Weights and Measures at the National Institute of Standards and Technology (NIST) in the Department of Commerce, Food and Consumer Service (FCS) at the U.S. Department of Agriculture (USDA), the Office of Food Labeling at the U.S. Food and Drug Administration (FDA) and state and local weights and measures offices.

To obtain data on the accuracy of net content labeling, weights and measures officials in twenty states visited 512 schools, universities, hospitals, retailers, dairies and packaging plants and examined a total of 1638 inspection lots of milk, other dairy products and juice. An "inspection lot" is the group of packages selected for inspection and consists of packages of the same product, with the same label and from the same packer.[(2)] Overall, these inspections revealed significant problems with short-filling. Just over 40% of the inspected lots failed. Of the 858 lots of milk and juice inspected at schools, universities and hospitals, almost half, 411, failed inspection. Of the 780 lots of milk and other products inspected in retail stores, packaging plants and dairies, almost a third, 255, failed inspection. Results of inspections varied widely from state to state and from packager to packager.

Part Two of this report provides an overview of federal and state regulation of net content labeling. The role of the organizations participating in this study is discussed in Part Three. Data from the state inspections have been compiled for this report and are presented in Part Four. Part Five discusses the adverse effects of short-filling on consumers, purchasers and industry. Parts Six and Seven describe follow-up actions to be taken by federal and state agencies, including business education and enforcement efforts.

Federal and State Regulation

Federal and state agencies share jurisdiction over net content labeling of dairy products and juice. The Fair Package and Labeling Act (FPLA) and the Federal Food, Drug and Cosmetic Act require that labels on packages of certain commodities, including food, identify the commodity, state the name and place of business of the manufacturer, packer or distributor, and state the net quantity of contents. Under the FPLA, FDA has enforcement responsibility with respect to food. 15 U.S.C. § 1456(a). In addition, food packages with incorrect content disclosures are considered "misbranded" pursuant to the Federal Food, Drug and Cosmetic Act, also enforced by the FDA. 21 U.S.C. § 343(e). The FTC retains concurrent jurisdiction over food labeling under Section 5 of the FTC Act. 15 U.S.C. § 45. Inaccurately disclosing content on food packages is a deceptive act or practice that violates Section 5.

Historically, state and local weights and measures offices have taken primary responsibility for ensuring the accuracy of food labeling. State and local officials conduct inspections at every step in the process of manufacturing, distributing and selling packaged goods. States' authority to enforce their laws and regulations relating to net content labeling is subject to two caveats. First, under the FPLA, state laws cannot be "less stringent than or require information different from" the requirements of the FPLA. 15 U.S.C. § 1461. Second, since November 8, 1991, the Nutrition Labeling and Education Act (NLEA) of 1990[(3)] has preempted state and local laws that are not "identical" to certain corresponding FDA labeling requirements. 21 U.S.C. § 343-1(a)(2). Thus, labeling requirements for food products are the same throughout the country. FDA has proposed a rule on net content labeling of foods that incorporates the inspection procedure used in this study, which is discussed in more detail below, and which would serve to codify current state labeling requirements and inspection practices.

Organizations Participating in this Study

The roles and interests of each of the organizations participating in this study are described below.

A. Bureau of Consumer Protection of the Federal Trade Commission

The Federal Trade Commission is a law enforcement agency charged by Congress to protect the public against deceptive or unfair practices and anticompetitive behavior. The FTC, through its Bureau of Consumer Protection, has been involved in issues concerning packaging and labeling for many years. The FTC has been responsible for enforcement of the FPLA, adopted in 1966, with respect to consumer commodities, excluding food as well as drugs, devices, and cosmetics. Under

Section 5 of the FTC Act, the FTC also has authority to take action against inaccurate net content statements on all commodities as deceptive practices and can seek remedies ranging from a cease and desist order to redress for consumers injured by deceptive practices.

The FTC's interest in labeling accuracy stems from its role in protecting consumers from deceptive practices. Because reports of short-filling of milk have come from a number of states across the country (for example, Colorado, Indiana and Minnesota) and have involved products that are purchased using federal monies, FTC staff coordinated an investigation of this issue with colleagues at NIST, USDA, FDA and the states. Staff of the FTC's Bureaus of Consumer Protection and Economics worked closely with federal and state officials in coordinating, collecting and compiling the information for this report.

B. Food and Consumer Service of the U.S. Department of Agriculture

Working in partnership with the states, Food and Consumer Service of the USDA seeks to provide needy persons with access to a more nutritious diet. FCS oversees the fifteen food assistance programs of USDA. States determine most administrative details regarding distribution of food benefits and the eligibility of participants, and FCS funds cover most of the states' administrative costs.

USDA's major food assistance programs targeted to school age children include the National School Lunch Program and the School Breakfast Program. Each school day, the National School Lunch Program serves about 26 million children in over 93,000 schools. More than half of these children receive the meal free or at a reduced price. Almost 6½ million children participate in the School Breakfast Program. About 80% of school breakfasts are served free.[(4)]

USDA has a strong interest in the accuracy of net content labeling of milk and juice. In particular, USDA regulations require that eight ounces of milk be offered with every subsidized school breakfast or lunch. In 1996, USDA subsidized approximately 5½ billion school breakfasts and lunches. If milk or juice supplied to schools is short-filled, USDA can seek administrative remedies ranging from restitution and corrective actions by the dairy or juice producer through suspension and debarment of the dairy or juice producer from future federal non-procurement contracts.[(5)]

C. Office of Weights and Measures at the National Institute of Standards and Technology and the National Conference on Weights and Measures

NIST, in the Department of Commerce, was established by Congress to support industry, commerce, scientific institutions and all branches of government. The Office of Weights and Measures (OWM) at NIST works to promote uniformity among the states in weights and measures standards, laws and practices to facilitate trade and protect businesses and consumers. OWM sponsors the National Conference on Weights and Measures (NCWM), a voluntary standards organization of state weights and measures officials and representatives of industry, consumers and federal agencies. NCWM's goal is to achieve uniformity in laws, regulations and other procedures through local adoption of its standards. NIST and NCWM work closely with industry members to promote equity in the marketplace and improve industry practices in matters involving weights and measures.

In 1981, NCWM adopted NIST Handbook 133.[(6)] This handbook was prepared by NCWM and NIST as a procedural guide for compliance testing of net content statements on packaged goods, in other words, to check whether the stated net content on the package conforms to federal and state legal requirements for net content declarations. Almost all states currently use the procedures set forth in NIST Handbook 133 to examine net content labeling.[(7)] Because there have been some minor revisions to NIST Handbook 133 since 1981, NIST and NCWM have recommended that all states adopt the most recent version of NIST Handbook 133 (Third Edition, Supplement 4, adopted in 1994) to ensure uniformity across the country. In doing so, the states would also conform to proposed federal requirements on net content labeling as set forth in a proposed FDA rule, which is discussed below.

OWM has worked closely with the states in the development and implementation of this joint federal/state project by providing training and equipment and assisting the states throughout this project. In early March, the twenty states participating in this study sent weights and measures inspectors to a five-day OWM training session, which focused on inspections of dairy products and juice using the procedures set forth in NIST Handbook 133. In addition, OWM purchased and then lent measuring equipment to several states participating in this project.

D. Office of Food Labeling at the Food and Drug Administration

FDA enforces the FPLA and the Federal Food, Drug and Cosmetic Act with respect to food and food packages by requiring that net content declarations be accurate. Food products with incorrect

content statements are considered "misbranded" pursuant to these acts. 14 U.S.C. § 1456(a) and 21 U.S.C. § 343(e). Violations of the Acts can result in seizure of the products by FDA. Alternatively, the dairy or juice producer can initiate a recall of the violative products.

On March 4, 1997, the FDA's Office of Food Labeling published proposed revisions to FDA's food labeling regulations that pertain to declaration of net quantity of contents on food packages. 62 Fed. Reg. 9826 (1997) (to be codified at 21 C.F.R. §§ 101, 161 and 501). The proposed FDA rule, which is essentially identical to NIST Handbook 133, would establish specific procedures for checking conformance to net content labeling requirements nationwide. Since almost all states currently use the procedures in NIST Handbook 133, the adoption of the proposed rule would codify existing state practices pertaining to the net content labeling of foods. The inspections that are the subject of this report followed the NIST Handbook 133 procedure and thus conformed to the proposed FDA rule.

E. State Weights and Measures

State and local weights and measures officials work to promote equity and fair competition in the marketplace. Their goal is to ensure that transactions based on weight, measure or count are accurate and that goods are sold in a manner that facilitates value comparison by consumers. Weights and measures officials are responsible for enforcing state and local laws that require commercial weighing and measuring devices to be accurate. For example, they check the accuracy of gasoline dispensers, food store scales, and checkout scanners. They are also responsible for ensuring that the net content declarations on packages of food and other commodities are accurate. In view of their multiple responsibilities, state and local weights and measures officials note that resource constraints have limited their ability to maintain a consistent enforcement presence in all areas of responsibility.

For this study, weights and measures officials in twenty states agreed to examine the accuracy of net content statements on packages of milk, other dairy products and juice. The states were trained by NIST staff in using the NIST Handbook 133 procedure and had the appropriate measuring equipment. In April and May 1997, weights and measures officials conducted inspections of dairy products and juice in schools, state and federal facilities, retail stores, packaging plants and dairies. The twenty participating states were Alabama, California, Delaware, Florida, Iowa, Kansas, Louisiana, Maryland, Massachusetts, Minnesota, Mississippi, Montana, New York, Oklahoma, Tennessee, Texas, Utah, Washington,[(8)] West Virginia and Wisconsin.

Joint Federal/State Study

This study was prompted by recent reports from several states of problems with short-filling of milk and juice served in schools or sold in retail stores. A preliminary inquiry revealed that federal, state and local inspections of net content labeling of dairy products and juice have been infrequent. Some states have periodically checked milk and other dairy products sold to consumers, but few states have regularly inspected milk or juice served in schools or in state and federal facilities, such as universities and hospitals.

To identify the scope of possible problems in the packaging of dairy products and juice, staff of the FTC, USDA, NIST and FDA worked with weights and measures inspectors in twenty states that were chosen for wide geographic coverage. Over a three-week period in April and May 1997, weights and measures inspectors conducted 1638 inspections of dairy products and juice served in 296 schools and state and federal facilities and sold by 216 retailers, packagers and dairies.

State weights and measures officials selected the sites where dairy products and juice were inspected. Based on available resources, each state attempted to visit as many different sites as possible across the state. Selections were not based on any prior history of inspection results. Although the results of this study cannot be statistically projected, the total number of inspections is large and provides a good overall view of industry's compliance with net content labeling requirements.[(9)]

Inspection results varied widely from packager to packager and dairy to dairy. A number of packagers and dairies included in this study were largely in compliance with net content labeling requirements. Many of the inspection lots that were approved contained slightly more than the labeled quantity, in other words, were slightly overfilled. On the other hand, a number of packagers and dairies were not in compliance with net content labeling requirements. As discussed below, this study indicates widespread problems with under-filling of milk, other dairy products and juice.

A. Study Methodology

The inspections were conducted in accordance with procedures set forth in NIST Handbook 133.

The goal of compliance testing of packaged goods, as stated in the handbook, is to ensure that the consumer/purchaser receives the labeled quantity of contents and to advise the manufacturer when improvements in the packaging process are necessary. Although the handbook was developed primarily for use by government officials, it can be useful to commercial and industrial establishments involved in the packaging, distribution and sale of commodities.(10) For example, the procedures set forth in the handbook can form the basis for systematic inspections of net content labeling by manufacturers, wholesalers, distributors and retailers.

NIST Handbook 133 provides procedures using statistical sampling techniques to examine individual lots of packages for conformance with legal requirements. The handbook provides for random sampling of packages from an inspection lot. For example, all gallons of Brand X whole milk with the same expiration date could be considered an inspection lot. The random sample of packages is measured, using specific procedures and equipment, to determine whether the packages are over-filled or under-filled.

For the lot to pass inspection, the random sample of packages must meet two requirements. First, the contents of the random sample of packages must, on average, equal or exceed the amount of product stated on the label.(11) Second, there cannot be any unreasonable variation in the amount of contents in individual packages. This means, for example, that for an inspection lot of 200 gallons of milk where a random sample of 12 packages has been selected for testing, the lot would fail inspection if any one of the tested packages were under-filled by more than 2½ fluid ounces.(12)

B. Inspection Results

Inspection results for 1638 lots of milk, other dairy products and juice in schools, universities, hospitals, retail outlets, packaging plants and dairies in twenty states were tabulated by state, establishment type and product type. The establishments visited were divided into four categories: schools, state/federal facilities (for example, universities and VA hospitals), retailers and packagers/dairies. The inspected products were divided into three categories: milk (regular white or chocolate milk: whole, low-fat or skim), juice (100% juice and juice drinks), and other dairy products (buttermilk, lactose-reduced milk, flavored milks, acidophilus milk, milk shakes, cottage cheese, yogurt, sour cream, half and half and cream, non-dairy drinks, and non-dairy creamers).

Chart 1: Disposition of Inspection by Type of Establishment

See Appendix A for Supporting Data Table

Overall, 40.66% (666) of the 1638 lots of milk, other dairy products and juice inspected in this study failed due to short-filling. Close to one-half, 47.90%, of all lots inspected at schools and state and federal institutions failed due to short-filling. Almost one-third, 32.69%, of inspected lots at retailers and packagers/dairies failed inspection.

Chart 2: Disposition of Inspections by Product Type

See Appendix A for Supporting Data Table

There was a wide variation in the percentages of approvals and rejections among the different product categories. For milk (regular and chocolate), 45.74% of all inspection lots failed. Almost one-fourth of inspection lots of juice and juice drinks failed inspection. Just under one-fifth of inspection lots of other dairy products were rejected.

Chart 3: Disposition of Inspections of Milk by Size of Container

See Appendix A for Supporting Data Table

Inspectors examined milk packaged in quarter-pints, half-pints, pints, quarts, half-gallons and gallons.(13) The rate of approvals of lots ranged from a high of 100% for 10 oz. containers to a low of 25% for 4 oz. containers. The highest approval rates were found in gallons and 10 oz. containers. The lowest approval rates were found in 4 oz., half-pint and quart containers. Approval rates for pints and half-gallons fell in between and were almost the same.

Table 4:
Average Percentage of Short-filling in Rejected Inspection Lots by Type of Establishment and Type of Product

Type of Establishment	Milk	Juice	Other Dairy	All Products
Schools	-1.54%	-1.62%	-3.11%*	-1.55%
State/Federal Facilities	-1.28%	-0.29%*	-0.45%*	-1.24%
Retailers	-0.51%	-0.38%*	-0.66%	-0.52%

Packagers/Dairies	-0.70%	-2.06%*	-0.39%	-0.70%
Total	-0.76%	-1.67%	-0.42%	-0.76%

*Fewer than 5 inspection lots are included in this calculated average percentage.

Table 4 shows the percentage of short-fill in rejected inspection lots by establishment type and product type.[(14)] Overall, the percentage of short-fill in all rejected inspection lots is .76%. Rejected lots in schools and state and federal facilities have the highest percentage of short-fill, 1.55% and 1.24% respectively. The percentage of short-fill in the rejected school inspections exceeds 1.50% in all three product categories. Looking across all establishment types at the three product categories, rejected lots of juice have the highest percentage of short-fill, followed by milk and other dairy products.

Table 5:
Distribution of States by Inspection Approvals

% of Inspections Lots Approved	Number of States	States (Total # of Inspection Lots)
20 - 29%	1	Iowa (103)
30 - 39%	1	Utah (49)
40 - 49%	6	Kansas (74), Louisiana (63), Massachusetts (47), Montana (80), New York (204), Texas (65)
50 - 59%	2	Mississippi (12), Oklahoma (106), Wisconsin (38)
60 - 69%	3	Tennessee (140), Washington (51)
70 - 79%	2	California (147), West Virginia (79)
80 - 89%	4	Alabama (12), Florida (102), Maryland (177), Minnesota (71)
90%+	1	Delaware (18)

Individual states conducted from 12 to 204 inspections. Seven of the states — California, Florida, Iowa, Maryland, New York, Oklahoma and Tennessee — inspected over 100 lots of milk, juice and other dairy products. The percentage of lots that passed inspection in each state ranged from a low of 25.24% in Iowa to a high of 94.44% in Delaware. Eight of the states had approval rates that were less than 50%.[(15)] Several of the states with higher levels of inspection approvals, such as Delaware, Florida, Maryland and Minnesota, have recently conducted inspections of milk in schools, retail stores and/or dairies. It appears that an ongoing enforcement presence alerts industry members that problems may exist. Thus informed, dairies and packagers can assess the adequacy of their quantity control practices, and distributors, wholesalers and retailers can choose to exercise closer oversight of their suppliers.

Injury Caused by Inaccurate Net Content Labeling

The primary injury caused by short-filling of dairy products and juice is economic, that is, consumers and schools are paying for product they do not receive. The amount of short-filling of any individual carton of milk or juice in this study ranged from less than 1% to more than 6%, but, with billions of government and consumer dollars spent on these products, the value of the missing milk and juice adds up quickly.

USDA reports that 6.64 billion gallons of fluid milk were sold in 1996.[(16)] Dairy producers' revenues from sales of fluid milk exceeded $8 billion. Although much of this milk is sold at retail stores to consumers, substantial amounts of milk are purchased by federal and state agencies for consumption at schools, universities, hospitals, and federal facilities such as VA hospitals and soldiers' homes. For example, FCS estimates that, in fiscal 1996, six billion cartons of milk were purchased for federal child nutrition programs, including the National School Lunch Program, School Breakfast Program, Special Milk Program, Summer Food Service Program and Child Care Program.

A failure to ensure accuracy of net content labeling can also be detrimental to industry members. When short-filling is found in retail stores or at the bottling plant or dairy, a usual consequence is that the weights and measures inspector orders the short-filled products "off-sale," which means removing them from store shelves and prohibiting their sale. Consequently, retail stores experience disruptions in sales due to empty shelves, and packaging plants and dairies suffer financial losses,

as well as disruptions in their production efforts. Injury to competition may also result from inequities in the marketplace due to short-filling by some industry members. For example, a company that fills its packages in full compliance with the law is at a competitive disadvantage if competing companies short-fill their packages (thereby reducing their production costs). Furthermore, industry members that fail to comply with the law can be subject to fines and other legal sanctions.(17)

Business Education

A major goal of this joint federal/state report is to inform industry of the problems that exist and to provide information that will enable industry members to examine and, where necessary, reform their packaging practices. All dairies and packagers included in this study will be notified of the study results, and federal and state agencies will work with dairies and juice producers to correct any problems found. In addition, the participants in this project have developed a "Facts for Business" pamphlet that will be distributed to dairies, producers, packers, wholesalers, distributors and retailers across the country.(18) Industry members will receive information on federal and state requirements regarding the accuracy of net content labeling, as well as the names and addresses of federal and state officials who can assist industry members in complying with these requirements.

An NCWM working group, comprised of government and industry, has drafted a list of good quantity control practices that is being considered by NCWM for publication in NIST Handbook 130, titled "Uniform Laws and Regulations." This set of quantity control practices is attached to this report as Appendix C and provides step-by-step guidance for dairies and packagers that want to assess and improve their manufacturing practices. Copies of these good quantity control practices will be distributed to industry members. In addition, NIST and NCWM will offer training sessions to industry members on good inspection, packaging and distribution practices.

Furthermore, USDA has requested that its state administering agencies send letters to each of the 20,000 State Food Authorities (SFAs) who are responsible for contracting with dairies and distributors for purchases of milk and juice and other foods for school breakfasts and lunches. These letters will provide information on this study and actions that should be taken if short-filling recurs. SFAs will be encouraged to contact state and local weights and measures offices for assistance.

Conclusion

This study shows that compliance with net content labeling requirements needs improvement. Although compliance levels were very high at many dairies and packagers included in this study, compliance levels at other facilities were poor or mixed. The government participants in this study are hopeful that increased public attention to the problem of short-filling and short-weighting will lead dairies and other packagers to examine and reform their packaging processes voluntarily. The inspections conducted in this study have already resulted in enforcement actions by some states. A number of states participating in this study ordered non-complying lots of milk, juice and other dairy products off-sale at retail stores, packaging plants and dairies. Some states are considering whether fines or other enforcement actions are appropriate. Additional unannounced inspections of net content labeling of milk, juice and other foods may also take place. Industry members that fail to pay sufficient attention to their manufacturing processes run the risk of government enforcement actions with the possibility of fines, exclusions from government contracts, and government mandates to change their practices. In the future, federal, state and local officials will continue to coordinate their efforts to monitor the accuracy of net content disclosures, and may take enforcement actions if additional significant problems with short-filling are found.

APPENDIX A:
Supporting Data Tables for Charts

Table 1: Disposition of Inspections by Type of Establishment

Type of Establishment	Number of Sites Visited	Disposition of Inspection	Number of Inspection Lots	Percentage of Inspection Lots
Schools	264	Approved Rejected	388 364 **752**	51.60% 48.40%

State/Federal Facilities	32	Approved Rejected	59 47 **106**	55.66% 44.34%
Retailers	138	Approved Rejected	298 142 **440**	67.73% 32.27%
Packagers/Dairies	78	Approved Rejected	227 113 **340**	67.76% 33.24%
All Establishments	512	Approved Rejected	972 666 **1638**	59.34% 40.66%

Table 2: Disposition of Inspections by Product Type

Type of Product	Disposition of Inspection	Number of Inspection Lots	Percentage of Inspection Lots
Milk	Approved Rejected	701 591 **1292**	54.26% 45.74%
Juice	Approved Rejected	155 47 **202**	76.73% 23.27%
Other Dairy	Approved Rejected	116 28 **144**	80.56% 19.44%

Table 3: Disposition of Inspections of Milk by Size of Container

Size of Container	Disposition of Inspection	Number of Inspection Lots	Percentage of Inspection Lots
4 oz./118 mL	Approved Rejected	1 3 **4**	25.00% 75.00%
8 oz./235 mL (half-pint)	Approved Rejected	356 391 **747**	47.66% 52.34%
10 oz./295 mL	Approved Rejected	8 0 **8**	100.00% 0.00%
16 oz./473 mL (pint)	Approved Rejected	35 24 **59**	59.32% 40.68%
32 oz./946 mL (quart)	Approved Rejected	54 52 **106**	50.94% 49.06%
64 oz./1.89 L (half-gallon)	Approved Rejected	140 93 **213**	60.09% 39.91%
128 oz./3.78 L (gallon)	Approved Rejected	107 28 **135**	79.26% 20.74%

APPENDIX B:
Summary Report by State and Establishment Type

Alabama

Type of Establishment	Disposition	Number of Inspection Lots	Results
Schools	Approved Rejected	5 0 **5**	100.00% 0.00%
Retailers	Approved Rejected	5 2 **7**	71.43% 28.57%

All Establishments	Approved Rejected	10 2 **12**	83.33% 16.67%

California

Type of Establishment	Disposition	Number of Inspection Lots	Results
Schools	Approved Rejected	27 11 **38**	71.05% 28.95%
State/Federal Facilities	Approved Rejected	17 9 **26**	65.38% 34.62%
Retailers	Approved Rejected	41 9 **50**	82.00% 18.00%
Packagers/Dairies	Approved Rejected	25 8 **33**	75.76% 24.24%
All Establishments	Approved Rejected	110 37 **147**	74.83% 25.17%

Delaware

Type of Establishment	Disposition	Number of Inspection Lots	Results
Schools	Approved Rejected	11 0 **11**	100.00% 0.00%
Retailers	Approved Rejected	4 1 **5**	80.00% 20.00%
Packagers/Dairies	Approved Rejected	2 0 **2**	100.00% 0.00%
All Establishments	Approved Rejected	17 1 **18**	94.44% 5.56%

Florida

Type of Establishment	Disposition	Number of Inspection Lots	Results
Schools	Approved Rejected	26 7 **33**	78.79% 21.21%
Packagers/Dairies	Approved Rejected	61 8 **69**	88.41% 11.59%
All Establishments	Approved Rejected	87 15 **102**	85.29% 14.71%

Iowa

Type of Establishment	Disposition	Number of Inspection Lots	Results
Schools	Approved Rejected	15 71 **86**	17.44% 82.56%
Retailers	Approved Rejected	2 0 **2**	100.00% 0.00%
Packagers/Dairies	Approved Rejected	9 6 **15**	60.00% 40.00%

All Establishments	Approved Rejected	26 77 **103**	25.24% 74.76%

Kansas

Type of Establishment	Disposition	Number of Inspection Lots	Results
Schools	Approved Rejected	16 18 **34**	47.06% 52.94%
State/Federal Facilities	Approved Rejected	7 13 **20**	35.00% 65.00%
Retailers	Approved Rejected	12 8 **20**	60.00% 40.00%
All Establishments	Approved Rejected	35 39 **74**	47.30% 52.70%

Louisiana

Type of Establishment	Disposition	Number of Inspection Lots	Results
Schools	Approved Rejected	11 14 **25**	44.00% 56.00%
State/Federal Facilities	Approved Rejected	2 0 **2**	100.00% 0.00%
Retailers	Approved Rejected	8 13 **21**	38.10% 61.90%
Packagers/Dairies	Approved Rejected	7 8 **15**	46.67% 53.33%
All Establishments	Approved Rejected	28 35 **63**	44.44% 55.56%

Massachusetts

Type of Establishment	Disposition	Number of Inspection Lots	Results
Schools	Approved Rejected	6 11 **17**	35.29% 64.71%
State/Federal Facilities	Approved Rejected	2 6 **8**	25.00% 75.00%
Retailers	Approved Rejected	2 2 **4**	50.00% 50.00%
Packagers/Dairies	Approved Rejected	10 8 **18**	55.56% 44.44%
All Establishments	Approved Rejected	20 27 **47**	42.55% 57.45%

Maryland

Type of Establishment	Disposition	Number of Inspection Lots	Results
Schools	Approved Rejected	58 3 **61**	95.08% 4.92%

Retailers	Approved Rejected	57 18 **75**	76.00% 24.00%
Packagers/Dairies	Approved Rejected	28 13 **41**	68.29% 31.71%
All Establishments	Approved Rejected	143 34 **177**	80.79% 19.21%

Minnesota

Type of Establishment	Disposition	Number of Inspection Lots	Results
Schools	Approved Rejected	13 3 **16**	81.25% 18.75%
State/Federal Facilities	Approved Rejected	7 0 **7**	100.00% 0.00%
Retailers	Approved Rejected	19 4 **23**	82.61% 17.39%
Packagers/Dairies	Approved Rejected	20 5 **25**	80.00% 20.00%
All Establishments	Approved Rejected	59 12 **71**	83.10% 16.90%

Mississippi

Type of Establishment	Disposition	Number of Inspection Lots	Results
Schools	Approved Rejected	7 5 **12**	58.33% 41.67%
All Establishments	Approved Rejected	7 5 **12**	58.33% 41.67%

Montana

Type of Establishment	Disposition	Number of Inspection Lots	Results
Schools	Approved Rejected	16 15 **31**	51.61% 48.39%
State/Federal Facilities	Approved Rejected	0 3 **3**	0.00% 100.00%
Retailers	Approved Rejected	9 13 **22**	40.91% 59.09%
Packagers/Dairies	Approved Rejected	12 12 **24**	50.00% 50.00%
All Establishments	Approved Rejected	37 43 **80**	46.25% 53.75%

New York

Type of Establishment	Disposition	Number of Inspection Lots	Results
Schools	Approved Rejected	50 84 **134**	37.31% 62.69%

State/Federal Facilities	Approved Rejected	4 9 **13**	30.77% 69.23%
Retailers	Approved Rejected	26 25 **51**	50.98% 49.02%
Packagers/Dairies	Approved Rejected	4 2 **6**	66.67% 33.33%
All Establishments	Approved Rejected	84 120 **204**	41.18% 58.82%

Oklahoma

Type of Establishment	Disposition	Number of Inspection Lots	Results
Schools	Approved Rejected	19 30 **49**	38.78% 61.22%
Retailers	Approved Rejected	22 15 **37**	59.46% 40.54%
Packagers/Dairies	Approved Rejected	12 8 **20**	60.00% 40.00%
All Establishments	Approved Rejected	53 53 **106**	50.00% 50.00%

Tennessee

Type of Establishment	Disposition	Number of Inspection Lots	Results
Schools	Approved Rejected	28 22 **50**	56.00% 44.00%
State/Federal Facilities	Approved Rejected	6 2 **8**	75.00% 25.00%
Retailers	Approved Rejected	36 4 **40**	90.00% 10.00%
Packagers/Dairies	Approved Rejected	25 17 **42**	59.52% 40.48%
All Establishments	Approved Rejected	95 45 **140**	67.86% 32.14%

Texas

Type of Establishment	Disposition	Number of Inspection Lots	Results
Schools	Approved Rejected	18 27 **45**	40.00% 60.00%
State/Federal Facilities	Approved Rejected	3 1 **4**	75.00% 25.00%
Retailers	Approved Rejected	6 6 **12**	50.00% 50.00%

Packagers/Dairies	Approved Rejected	0 4 **4**	0.00% 100.00%
All Establishments	Approved Rejected	27 38 **65**	41.54% 58.46%

Utah

Type of Establishment	Disposition	Number of Inspection Lots	Results
Schools	Approved Rejected	9 16 **25**	36.00% 64.00%
State/Federal Facilities	Approved Rejected	1 4 **5**	20.00% 80.00%
Retailers	Approved Rejected	8 3 **11**	72.73% 27.27%
Packagers/Dairies	Approved Rejected	1 7 **8**	12.50% 87.50%
All Establishments	Approved Rejected	19 30 **49**	38.78% 61.22%

Washington

Type of Establishment	Disposition	Number of Inspection Lots	Results
Schools	Approved Rejected	21 15 **36**	58.33% 41.67%
State/Federal Facilities	Approved Rejected	7 0 **7**	100.00% 0.00%
Packagers/Dairies	Approved Rejected	4 4 **8**	50.00% 50.00%
All Establishments	Approved Rejected	32 19 **51**	62.75% 37.25%

West Virginia

Type of Establishment	Disposition	Number of Inspection Lots	Results
Schools	Approved Rejected	24 4 **28**	85.71% 14.29%
Retailers	Approved Rejected	30 11 **41**	73.17% 26.83%
Packagers/Dairies	Approved Rejected	7 3 **10**	70.00% 30.00%
All Establishments	Approved Rejected	61 18 **79**	77.22% 22.78%

Wisconsin

Type of Establishment	Disposition	Number of Inspection Lots	Results
Schools	Approved Rejected	8 8 **16**	50.00% 50.00%

State/Federal Facilities	Approved Rejected	3 0 **3**	100.00% 0.00%
Retailers	Approved Rejected	11 8 **19**	57.89% 42.11%
All Establishments	Approved Rejected	22 16 **38**	57.89% 42.11%

APPENDIX C:
Good Quantity Control Practices

GOOD QUANTITY CONTROL PRACTICES

Good Quantity Control Practices means that the plant managers should take all reasonable precautions to ensure the following quantity control standards or their equivalent are met:

1. A formal quantity control function is in place with authority to review production processes and records, investigate possible errors, and approve, control, or reject lots.

2. Adequate facilities (e.g., equipment standards and work areas) for conducting quantity control functions are provided and maintained.

3. A quantity control program (e.g., a system of statistical process control) is in place and maintained.

4. Sampling is conducted at a frequency appropriate to the product process to ensure that the data obtained is representative of the production lot.

5. Production records are maintained to provide a history of the filling and net content labeling of the product.

6. Each "production lot" contains on the average the labeled quantity, and the number of packages exceeding the specified maximum allowable variation (MAV) value in the inspection sample shall be no more than permitted in Tables 2-1 and 2-2 in NIST Handbook 133.

7. Packaging practices are appropriate for specific products, and measurement procedures (e.g., quantity sampling, density and tare determinations) and guidelines for recording and maintaining test results are documented.

8. Personnel responsible for quantity control follow written work instructions and are competent to perform their duties (e.g., background, education, experience and training). Training is conducted at sufficient intervals to ensure good practices.

9. Recognized procedures are used for the selection, maintenance, adjustment, and testing of filling equipment to ensure proper fill control.

10. Weighing and measuring devices are suitable for their intended purpose, and measurement standards are suitable and traceable to national standards. This includes a system of equipment maintenance and calibration to include record keeping procedures.

11. Controls over automated data systems and software used in quantity control ensures that information is accessible, but changeable only by authorized personnel.

12. Tare materials are monitored for variation. Label changes are controlled to ensure net quantity matches labeled declaration.

Endnotes

* This Report represents the views of the staff of the Federal Trade Commission. It does not necessarily represent the views of the Federal Trade Commission or individual Commissioners.

1. The term "short-filling" refers to packages that contain less than the labeled quantity of contents in terms of volume, such as fluid ounces or milliliters. The term "short-weighting" refers to packages that contain less than the labeled quantity of contents in terms of weight, such as pounds. In this report, the term short-filling will encompass both short-filling and short-weighting.

2. To the extent possible, an inspection lot consists only of packages packed at the same place, at the same time, and under the same conditions. Packages of milk, for example, are sorted by the expiration or "sell by" date. Thus, quarts of whole milk in paper cartons from Dairy A with a May 15 expiration date could be treated as one lot for inspection purposes. The size of an inspection lot might vary from less than a dozen packages in a retail store to thousands of packages at a packing plant. Under the inspection protocol used in

this study, a random sample of packages was selected from the inspection lot and tested for accuracy. For example, if the lot size was 12 to 250 packages, a random sample of 12 packages was tested for accuracy. If the lot size was 251 to 3200 packages, a random sample of 24 packages was selected and tested.

3. The NLEA amended the Federal Food, Drug and Cosmetic Act to require, inter alia, nutrition labeling on foods. 21 U.S.C. § 343.

4. FCS Program Information Report, March 1997.

5. In contrast to federal procurement contracts in which the federal government is the direct purchaser, federal non-procurement contracts are those in which another party receives federal funds to pay for purchases. Federal non-procurement contracts include school districts' purchases of milk and juice for federally subsidized breakfasts and lunches.

6. NIST Handbook 133 replaced NBS Handbook 67, which was adopted by NIST's predecessor, the National Bureau of Standards, in 1959. Weights and measures and other public officials, manufacturers, packagers, retailers and trade associations participated in the development of both NBS Handbook 67 and NIST Handbook 133.

7. As of July 1997, 36 states have adopted NIST Handbook 133 as a law or regulation, and 11 states and the District of Columbia use the procedures in NIST Handbook 133 as a guideline. One state has adopted NBS Handbook 67. The two remaining states currently do not use the procedures in NIST Handbook 133.

8. Weights and measures inspectors in the Consumer Affairs Unit, City of Seattle, Washington, also participated in this study.

9. The results cannot be statistically projected to the entire country because the inspection sites were not randomly selected and the 20 states participating in this study are not necessarily representative of all 50 states.

10. For copies of NIST Handbook 133, contact: Office of Weights and Measures, NIST North (Bldg 820), Room 223, Gaithersburg, MD 20899; (301) 975-4004; Fax: (301) 926-0647.

11. The testing procedure uses a sampling technique and allows for reasonable variations. Even when a packaging plant has good manufacturing practices in place, there will be some variation in fill from package to package. The NIST procedure recognizes this fact and includes mathematical calculations that provide a 97% confidence level that the lot is correctly approved or rejected. In other words, there is a 97% likelihood that the average contents of the selected random sample accurately represents the average contents of the entire lot of packages.

12. NIST Handbook 133 lists the "maximum allowable variation," or MAV, for different labeled contents. For example, for half-pints, the MAV is 0.38 fluid ounces, and for half-gallons, the MAV is 1.5 fluid ounces. For lots consisting of 3200 packages or less, if a single package in the random sample exceeds the MAV, the lot fails inspection. For lots with more than 3200 items, the handbook permits one package in the random sample to exceed the MAV.

13. In this table, the container sizes are listed by fluid ounces. On the packages, volume is given in metric measurements as well. Occasionally, the metric measurement is slightly greater than the fluid ounce measurement. For example, a container of milk may be labeled as containing 8 fluid ounces and 240 milliliters. Under the NIST 133 procedure, the contents of the package must equal the higher of the two stated volumes. Because 240 milliliters equals about 8.1 fluid ounces, an inspector uses the higher milliliter statement in determining the accuracy of the net content labeling of the package.

14. The percentages have been calculated on a weighted basis. In other words, the calculated percentage equals the total volume of short-fill in rejected lots divided by the total labeled content in the rejected lots.

15. A list of the numbers and percentages of approvals and rejections on a state-by-state basis is attached as Appendix B.

16. This equals an annual per capita consumption of 24.8 gallons of fluid milk.

17. State laws and regulations require that each food package bear the name of the party responsible for the net content statements on the package. For example, Distributor X contracts with several dairies to package flavored milk and the packages bear the name of Distributor X as the party responsible for the net content statements on the packages. In other instances, the dairy may be the party responsible for the net content statements. Government fines and sanctions for short-filling are generally imposed against the named responsible party.

18. For copies of this report and "Facts for Business," contact: Consumer Response Center, Federal Trade Commission, Washington, D.C. 20580; (202) 326-2222 or TDD (202) 326-2502. The report and "Facts for Business" can also be found at www.ftc.gov on the Internet.