



**Cornell University**  
**College of Agriculture**  
**and Life Sciences**

Department of Food Science  
Stocking Hall, Cornell University  
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DATE: September 30, 2013  
TO: Dairy Processors, HR Personnel and Others Interested in Dairy Processing  
FROM: Steven C. Murphy, Sr. Extension Associate  
RE: **Fluid Milk Processing for Quality & Safety Course, November 12-14, 2013**

Cornell University's Department of Food Science is offering a workshop in *Fluid Milk Packaged for Consumption – Processing & Testing for Quality & Safety* November 12-14, 2013. The program will be held in the Food Science Conference Center, **148 Stocking Hall** on the Cornell Campus in Ithaca, NY. It begins 8:00 AM on Tuesday, November 12 and will end by 1:00 PM on Thursday, November 14.

This workshop is designed for those involved and interested in fluid milk processing and testing with the intent of providing training and tools to support and improve on quality assurance and safety programs for bottled milks. It will be instructed by Cornell Dairy Foods Extension staff and industry experts. While the course design assumes participants have some prior knowledge of dairy microbiology & processing (e.g., *Basic Dairy Science Course*), critical concepts will be reviewed and expanded on for those who do not. This course can be taken as a stand-alone program, but it also fulfills the core training requirement of a *Cornell Dairy Foods Certificate for Fluid Milk* after all required prerequisite courses have been taken (e.g., *Basic Dairy Science & Sanitation, HACCP, HTST*). A complete program follows.

**PRE-REGISTRATION IS REQUIRED.** Enrollment is limited to 30 participants and will be on a first-come, first-serve basis, so please send your registration as soon as possible. The course fee is \$350.00 per person for NY companies; for companies outside New York State the fee is \$420.00. Materials, breaks and lunch (November 14 & 15 only) are included in the registration. The registration form is included in this mailing and must be completed to confirm registration. Be sure to complete all sections of the form, including the check mark for a parking permit, and return by fax, e-mail or postal it to arrive by the deadline of Thursday, October 31, 2013 to:

Janene Lucia  
Dept. of Food Science  
Stocking Hall  
Cornell University  
Ithaca, NY 14853  
607-255-2892

**Fax: 607-255-7619 or [jgg3@cornell.edu](mailto:jgg3@cornell.edu)**

Note: *We now accept on-line credit card payments at:*

<https://cbs.cornell.edu/ccbilling/billing.aspx?eventid=C0DCE4C2-9315-4ABB-B04E-138827159F9D>. *Completed registration forms are required to be sent in separately. Registration form & payment must be received by October 31.*

**Payment must be received by October 31, 2013 and can be done on-line with a credit card at:**  
<https://cbs.cornell.edu/ccbilling/billing.aspx?eventid=C0DCE4C2-9315-4ABB-B04E-138827159F9D>

If you have difficulties with the credit card processing or are unable to pay by credit card contact Janene.

Confirmation of registration, requested parking permits & area maps will be mailed Friday, November 1. A listing of area **hotels** is included; we suggest that you make your reservations ASAP.

Cancellation Policy: No refunds can be given if not cancelled by COB October 31. Substitute registrants will be accepted at any time, but doing so before the November 1 mailing is appreciated.

*Please call Steve (607-255-2893) or Janene (607-255-2892) if you have further questions.*

This course meets the Core Course Requirement of the **Dairy Foods Certificate Program for Fluid Milk**. An application form for the Dairy Extension Certificate Program is included. If you have not already enrolled and are interested – please return the completed enrollment form to Janene with your registration. For questions/more information, contact Janene at:

607-255-2892; [jgg3@cornell.edu](mailto:jgg3@cornell.edu); or go to:

<http://foodscience.cornell.edu/cals/foodsci/extension/dairy-foods-extension-programs.cfm>

**- Fluid Milk Packaged for Consumption -  
Processing & Testing for Quality & Safety**

*A Core Course of the Cornell Dairy Foods Certificate Program*

November 12-14, 2013

*Cornell University, Department of Food Science*

*Program Draft*

Tuesday November 12, 2013

Instructors

8:00 am	Registration	
8:30 am	Welcome & Introductions – Course Objectives/Pre-Quiz	
9:00 am	Overview of the Fluid Milk Industry & Regulations <ul style="list-style-type: none"><li>- Pasteurized Milk Ordinance (PMO &amp; NY Regulations)</li><li>- Standards of identity / labeling requirements</li><li>- Current trends in processing &amp; consumption</li></ul>	Kim Bukowski Cornell University
9:45 am	Dairy Microbiology – Quality & Food Safety Review <ul style="list-style-type: none"><li>- Definitions / characteristics of organisms of concern</li><li>- Intrinsic factors for microbial growth &amp; control</li><li>- Fluid milk spoilage organisms &amp; patterns</li><li>- Pathogens of concern in fluid milk environments</li></ul>	Steve Murphy Cornell University
10:30 am	BREAK	
10:45 am	Raw Milk Quality for Fluid Milk <ul style="list-style-type: none"><li>- Milk composition overview &amp; relation to milk flavor</li><li>- Non-microbial &amp; microbial defects of raw milk</li><li>- Microbial and chemical testing (e.g., drugs &amp; water)</li><li>- Significance of testing to milk quality/shelf-life</li><li><i>Exercise</i> – sensory evaluation, raw milk defects</li></ul>	Steve Murphy Cornell University
12:15 pm	Lunch (provided)	
1:00 pm	<i>Exercise</i> – Developing a raw milk receiving, testing & handling program & action plan; <ul style="list-style-type: none"><li>- group exercise &amp; presentations</li></ul>	Staff & Participants
2:15 pm	Good Manufacturing Practices - review	
2:45 pm	Break	
3:00 pm	Unit Operations in Fluid Milk Processing <ul style="list-style-type: none"><li>- Separation, standardization, clarification, bacto-fugation</li><li>- Blending, vitamin fortification,</li><li>- Pasteurization options: Vat vs. HTST vs. UP/UHT</li><li>- Homogenization, design options and pressures</li><li>- Pasteurized milk storage &amp; distribution piping &amp; valves</li></ul>	Kim Bukowski Cornell University
4:00 pm	<i>Exercise</i> – Standardization & valve mapping <ul style="list-style-type: none"><li>- group exercise &amp; presentations</li></ul>	Staff & Participants
5:00 pm	Questions & Answers/ Adjourn	

# Fluid Milk for Consumption – Processing & Testing for Quality & Safety

## Program Draft

(Continued)

Wednesday November 13, 2013

Instructor

8:00 am	Day 1 Overview; Questions & Answers	
8:15 am	Unit Operations – Packaging Operations for Fluid Milk <ul style="list-style-type: none"><li>- Rotary bottle fillers, conventional pasteurized milk;</li><li>- Operation, preventative maintenance &amp; inspection</li><li>- Single-serve packaging requirements</li></ul>	Bob Kuhn Upstate Niagara Coop
9:00 am	Unit Operations – Packaging Operations for Fluid Milk <ul style="list-style-type: none"><li>- Gable-top paper fillers, conventional pasteurized milk</li><li>- Options for extended shelf-life</li><li>- Operation, preventative maintenance &amp; inspection</li><li>- Single serve packaging requirements</li></ul>	Rich Szyperski Evergreen Packaging
10:00 am	Break	
10:15 am	Cleaning / Sanitization for Fluid Milk Processing Systems <ul style="list-style-type: none"><li>- Raw milk; tank trucks, tanks, silos</li><li>- Vat, HTST, UP/UHT processing systems</li><li>- Past. milk storage, valves, pumps, packaging systems</li><li>- CIP circuit design and programming</li><li>- Testing &amp; monitoring</li></ul>	Larry Bogdan Diversey, Inc., <i>- a Division of Sealed Air</i>
11:45 am	Lunch (provided)	
12:30 pm	Preventative Maintenance for Quality & Shelf-Life <ul style="list-style-type: none"><li>- Valves, pumps, gaskets, fillers, and more</li><li>- In-process standard operating procedures</li><li>- Likely suspects when shelf-life fails</li></ul>	Staff
1:00 pm	<i>Exercise</i> – Plant tour and demonstrations <ul style="list-style-type: none"><li>- Plant tour, mapping the flow of a fluid milk system</li><li>- Preventative maintenance; pumps, valves, gaskets</li><li>- Preventative maintenance; rotary jug fillers</li><li>- Packaging filler evaluations / package dye checks</li></ul>	Participants & Staff
3:00 pm	Break	
3:15 pm	Evaluating the Quality & Shelf-Life of Fluid Milk <ul style="list-style-type: none"><li>- Non-microbial defects in pasteurized milk (samples)</li><li>- Microbial spoilage patterns &amp; characterization (samples) post-pasteurization contamination (PPC) heat-resistant spore forming</li><li>- Fluid milk shelf-life evaluation programs &amp; methods</li><li>- Stress-tests &amp; trouble-shooting tools (e.g., line samples)</li></ul>	Steve Murphy Deanna Simons Cornell University
4:15 pm	Quality / Laboratory Data Management Systems	Bob Kuhn Deanna Simons
5:00 pm	Questions & Answers, Adjourn	

*Cornell Dairy Foods Extension Programs are Supported by the NY State Milk Promotion Order*

**Fluid Milk for Consumption – Processing & Testing for Quality & Safety**  
**Program Draft**

(Continued)

Thursday November 14, 2013

Instructor

8:15 am	Review Days 1-2: Questions & Answers	
8:30 am	Developing/Fine-Tuning a Sensory Evaluation Program - Employee screening, training, experience, attitude - Proper judging techniques - Review of basic tastes & other senses	Nancy Carey Cornell University
9:15 am	<i>Exercise</i> – Blind Tasting - identifying defects, causes & solutions	
9:45 am	Overview of Food Safety Systems - HACCP, FSMA, GFSI - Hazards defined for fluid milk - Environmental control	Steve Murphy Cornell University
10:15 am	Break	
10:30 am	<i>Exercise</i> – Developing a Milk Quality / Safety Program - Daily activities (sanitation, inspection, monitoring) - Scheduled preventative maintenance programs - Sampling & testing plan; corrective actions - Customer complaint response	Participants & Staff
12:00 pm	Program Summary, Questions & Answers; Final Exam	
1:00 pm	Adjourn – Class Certificates	

**Course Instructors**

Kim Bukowski, Deanna Simons, Nancy Carey and Steve Murphy  
Cornell University, Department of Food Science

Bob Kuhn  
Corporate Quality Assurance Director  
Upstate-Niagara Cooperative

Rich Szyperski  
Technical Product Manager & Equipment Sales Specialist  
Evergreen Packaging

Larry Bogdan  
Business Development Manger  
Diversey Inc., a Division of Sealed Air