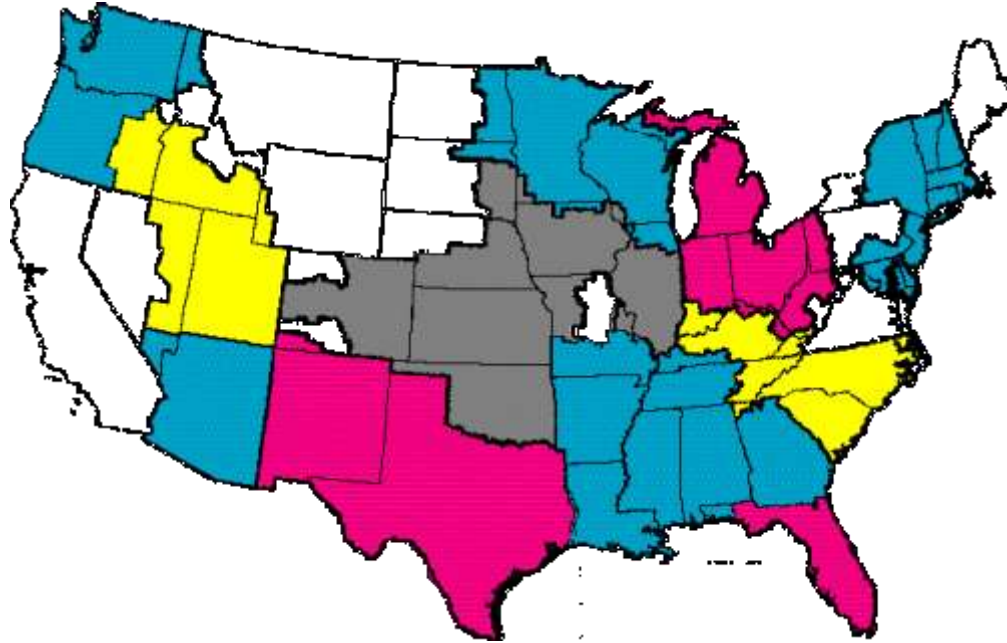


On Farm Milk Concentration - Current and Future Use



Richard Fleming
Market Administrator
Federal Order 126



On Farm Milk Concentration

- ❖ **Gain Access to New Markets through reduced Hauling**
- ❖ **Value Added Products**
 - **Ultrafiltered Milk**
 - **Condensed Milk**
 - **Milk Protein Concentrate**
 - **Component Standardization**



Basics of Separation Processes

- ❖ **Retentate** - the material that does not pass through the filter
- ❖ **Permeate** - the material that passes through the filter

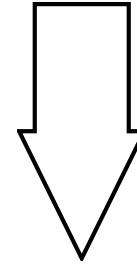
Types of Membrane Filtration

❖ **Reverse Osmosis - smallest pore size**

❖ **Nanofiltration**

❖ **Ultrafiltration**

❖ **Microfiltration - largest pore size**





On Farm Concentration of Producer Milk

❖ **Reverse Osmosis (RO)**

- Same as Condense - *Better Product***
- Fluid Milk Product**
- Large Capital Investment for Farmer**
- Used Currently in Ice Cream**



On Farm Concentration of Producer Milk

❖ **Ultrafiltration (UF)**

- Lactose Reduced Condense**
- Fluid Milk Product**
- Large Capital Investment for Farmer**
- Used Currently in Cheddar Cheese**



Current Membrane Filtration Activity in the Southwest

	<u>No.</u>
Reverse Osmosis (with a separator)	1
- 1 in Texas operated by Select Milk Producers	
Ultrafiltration	4
- 1 in Texas operated by Elite Milk Producers	
- 3 in New Mexico operated by Select Milk Producers	



Current S.W. Concentrated Product Information

❖ **RO Milk Product**

- **35 to 40 loads/month**
- **Mainly 1 Customer**

❖ **UF Milk Product**

- **210 to 240 loads/month**
- **About 12 customers**



Other Uses of Current Concentrated Product

❖ **RO Milk Product**

- **Reconstituted Class I Fluid Milk Products (What Component Levels?)**
- **Fortify Fluid Milk Products**
- **Yogurt Production**

❖ **UF Milk Product**

- **Cottage Cheese Production**
- **Lactose Reduced Products**
- **Reduced Calorie Products**



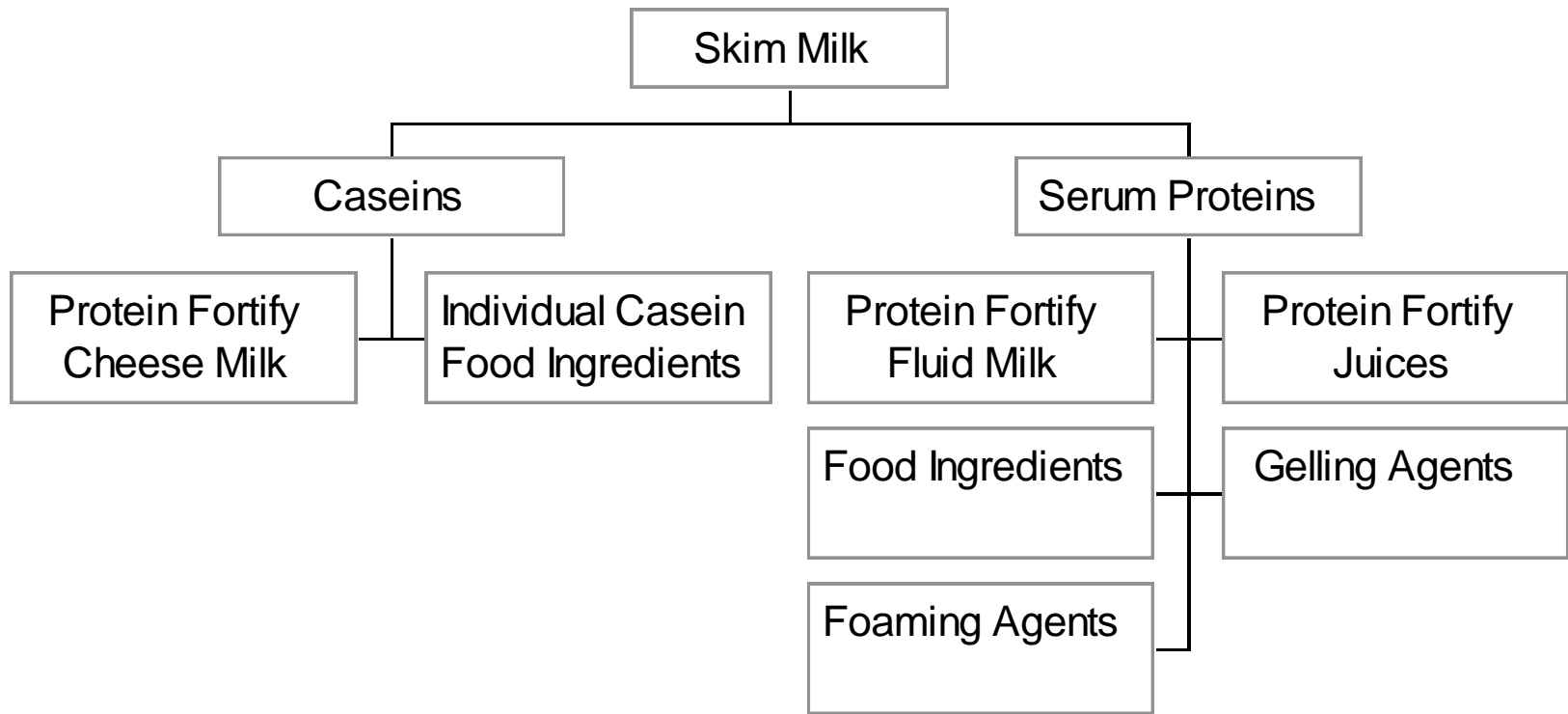
Future On Farm Milk Fractionation

❖ **Microfiltration**

- **Components separate worth more than together**
- **Casein Concentrates**
- **Whey Protein Concentrates**
 - ◆ **Beverage Industry**
 - ◆ **Food Industry**
 - ◆ **Nutraceutical Uses**



Skim Milk Fractionation by Microfiltration





Pricing Producer Milk Used for RO and UF Products

- ❖ **When the facilities are plants, the milk will be priced and classified according to end use.**
- ❖ **When the facilities are own-farm units, the milk equivalent will be priced and classified as producer milk at the receiving plants location.**



Implications for Federal Order System

- ❖ **When raw milk is fractionated and used in dairy products of different classes (e.g., class I and III) a system of analysis (for fat, protein, and other solids), accounting, and pricing fractions will be needed.**
- ❖ **Classes of Milk may need to be reduced due to our inability of defining appropriate values for these new products.**