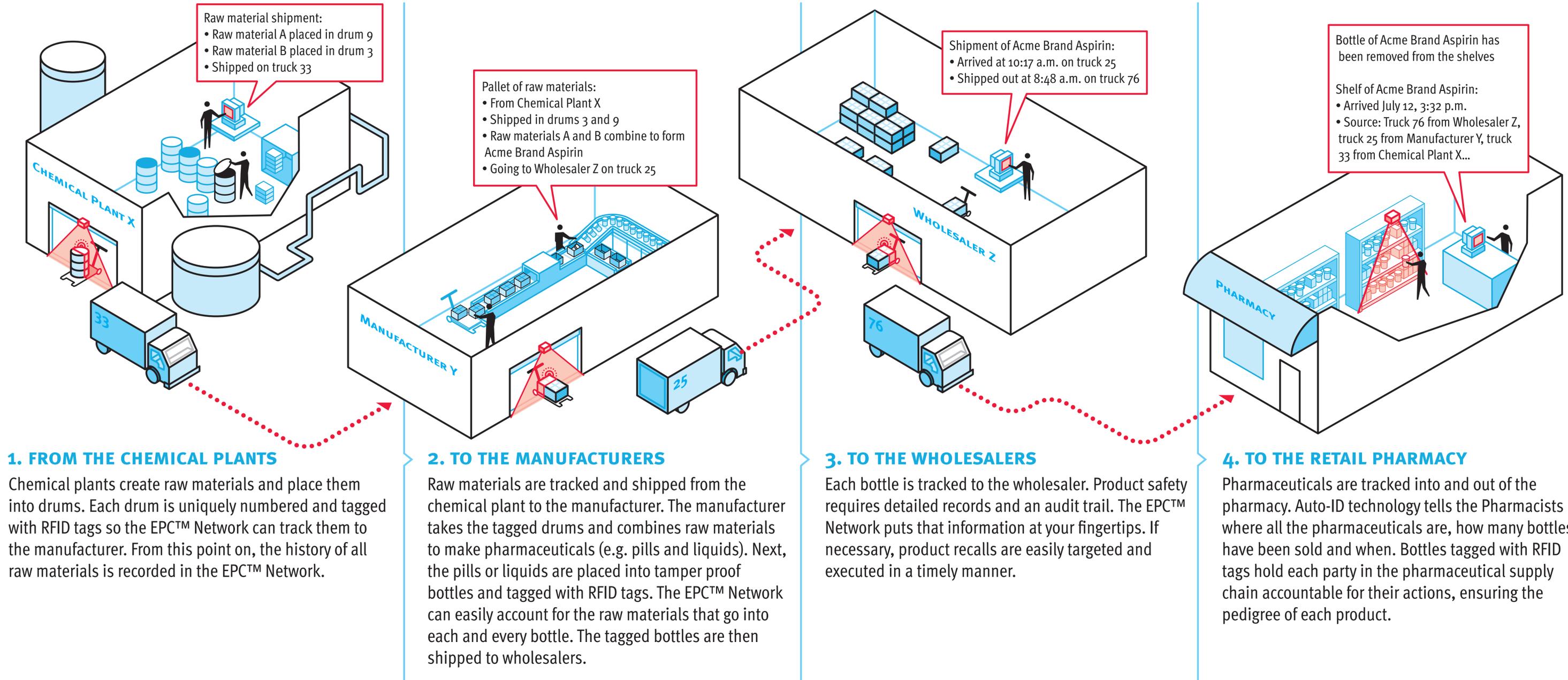The pharmaceutical supply chain is a complex one. Not knowing the process by which pharmaceuticals make their way to pharmacy shelves can lead to risk in counterfeit products. Auto-ID technology helps manage this risk and maintain pedigree by tagging pharmaceuticals and product packaging with radio frequency identification (RFID) tags each possessing a unique EPC™. This allows products to be tracked, traced and recalled if necessary.

Raw material shipment:
• Raw material A placed in drum 9
• Raw material B placed in drum 3
• Shipped on truck 33

Pallet of raw materials:
• From Chemical Plant X
• Shipped in drums 3 and 9
• Raw materials A and B combine to form Acme Brand Aspirin
• Going to Wholesaler Z on truck 25

Shipment of Acme Brand Aspirin:
• Arrived at 10:17 a.m. on truck 25
• Shipped out at 8:48 a.m. on truck 76

Bottle of Acme Brand Aspirin has been removed from the shelves

Shelf of Acme Brand Aspirin:
• Arrived July 12, 3:32 p.m.
• Source: Truck 76 from Wholesaler Z, truck 25 from Manufacturer Y, truck 33 from Chemical Plant X...

1. FROM THE CHEMICAL PLANTS

Chemical plants create raw materials and place them into drums. Each drum is uniquely numbered and tagged with RFID tags so the EPC™ Network can track them to the manufacturer. From this point on, the history of all raw materials is recorded in the EPC™ Network.

2. TO THE MANUFACTURERS

Raw materials are tracked and shipped from the chemical plant to the manufacturer. The manufacturer takes the tagged drums and combines raw materials to make pharmaceuticals (e.g. pills and liquids). Next, the pills or liquids are placed into tamper proof bottles and tagged with RFID tags. The EPC™ Network can easily account for the raw materials that go into each and every bottle. The tagged bottles are then shipped to wholesalers.

3. TO THE WHOLESALERS

Each bottle is tracked to the wholesaler. Product safety requires detailed records and an audit trail. The EPC™ Network puts that information at your fingertips. If necessary, product recalls are easily targeted and executed in a timely manner.

4. TO THE RETAIL PHARMACY

Pharmaceuticals are tracked into and out of the pharmacy. Auto-ID technology tells the Pharmacists where all the pharmaceuticals are, how many bottles have been sold and when. Bottles tagged with RFID tags hold each party in the pharmaceutical supply chain accountable for their actions, ensuring the pedigree of each product.

THE EPC™ NETWORK: HOW DOES IT WORK?

With the new EPC™ network, manufacturers, distributors and retailers will be able to track and trace items automatically throughout the supply chain. Here's how it works:

The Auto-ID Center | www.autoidcenter.org | ©2003 XPLANE.com®

THE RFID TAGS
An Electronic Product Code (EPC™) is embedded into microscopic "smart tags" and attached to an item's packaging (e.g. drums or bottles). These tags allow the items to be tracked in a completely automated, cost-effective fashion.
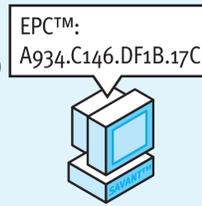
THE READERS
Radio Frequency Identification (RFID) readers can scan each smart tag and send the item's EPC™ to a computer running Savant™.
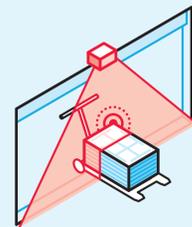
SAVANT™
Savant™, middleware that connects the Auto-ID Network, queries an Object Name Service (ONS) database.

EPC™: A934.C146.DF1B.17C

ONS SERVER
The ONS maps the EPC™ to a URL where all of the item's information is stored using Physical Markup Language (PML).

Look under Pharmaceuticals, Inc.

PML SERVER
The PML server contains information about the item itself, its manufacturing shipping and other related data.

Pharmaceuticals produced in Dallas shipped to New York...