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It's a nagging, industry-wide question, and one that keeps many a supplier and end user up at night.

Oil Cleanliness Basics

One hallmark of a world-class company is its respect for oil cleanliness and the importance of such cleanliness on equipment reliability. *Lubrication Management & Technology* recently concluded a three-part series entitled "Oil Cleanliness: The Key to Equipment Reliability" *(see issues September/October 2007, November/December 2007 and January/February 2008).* Please refer to these articles for a more complete discussion of oil cleanliness.

In the multi-step process of moving lubricants from THEIR tanks to YOUR equipment, where does contamination start? At what point do dirt and/or moisture enter the supply chain? Is it a problem with storage, handling, dispensing or a combination? This three-part series aims to answer these questions once and for all. Based on studies of actual field data of the cleanliness of new oil put into equipment, it will provide recommendations on how to more effectively guarantee cleanliness in the future. A continuing themme in this series will be the fact that it takes a strong, cooperative effort among lubricant supplier, distributor/marketer and end user for any oil cleanliness program to be successful (see Fig. 1).

Most lubricants purchased today come from a distributor and are delivered in the following ways:

- Bulk shipments from the lube blending plant delivered directly to the customer
- Bulk shipments from stored lubricants at the distributor
- Drums and pails filled at the blend plant and delivered by distributor
- Drums and pails filled at distributor from oil in tankage How the lubricant is delivered by the distributor will have a major impact on oil cleanliness.

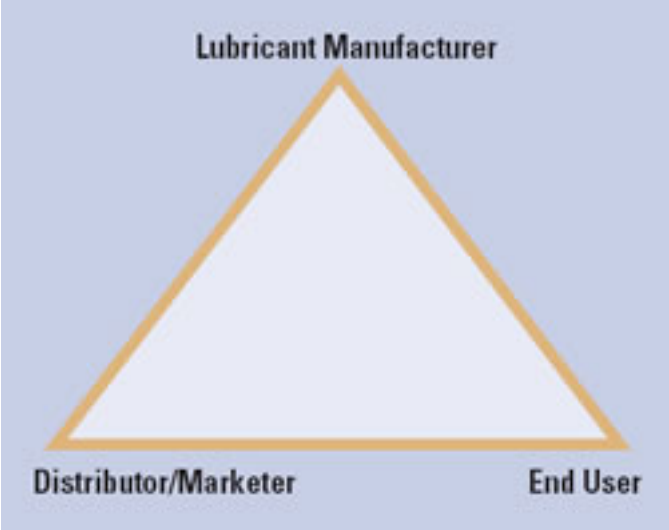

Fig. 1. A cooperative effort among all parties is vital in ensuring a company's oil cleanliness program.

[redacted] purchased from four major lubricant manufacturers for evaluation.

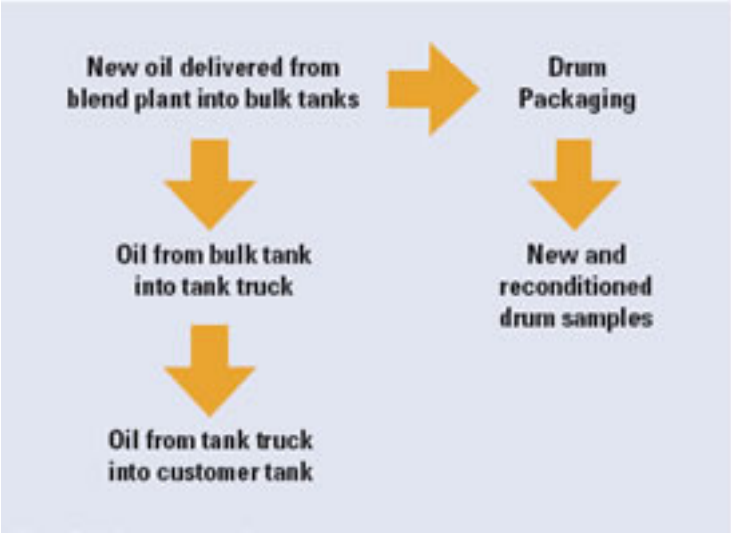

Fig. 2. Fluid flow through a distributor operation

[redacted]

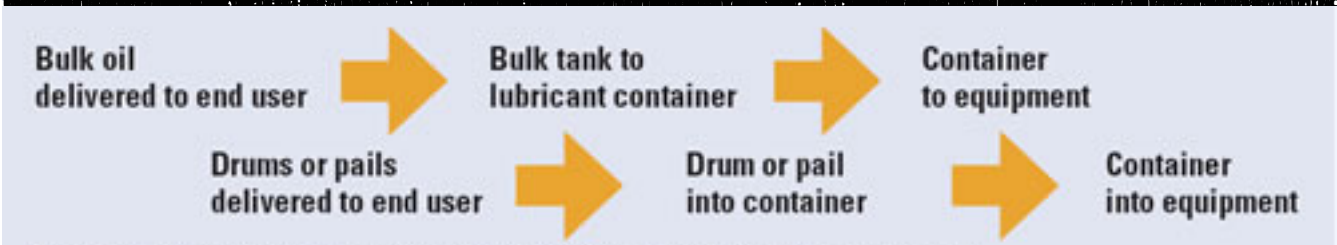

Fig. 3. Contaminants can be introduced at various points after lubricants reach an end-user facility.

[redacted]

Table I. ISO 4406: 1999 Chart

Range Number	Number of particles per ml	
	More than	up to & including
24	80000	160000
23	40000	80000
22	20000	40000
21	10000	20000
20	5000	10000
19	2500	5000
18	1300	2500
17	640	1300
16	320	640
15	160	320
14	80	160
13	40	80
12	20	40
11	10	20
10	5	10
9	2.5	5
8	1.3	2.5
7	0.64	1.3
6	0.32	0.64

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