What's the issue?
In August 2002, Alaska Airlines switched from Mobil Jet Engine Oil 291 to Mobil Jet Engine Oil 254 on its B737 fleet.

Why did they make that switch?
Mobil 291 was degrading the seals in the engine on the B737.

What's the problem?
Mobil 254 degrades the seals in the APU on the B737. This has been demonstrated extensively. Alaska should find a product that does not degrade the seals in either the APU or the engine, not just switch back to Mobil 254 that has already been shown to cause problems.

What makes Mobil 254 and Mobil 291 so toxic?
These oils (and many hydraulic fluids) contain a chemical called TCP (tricresyl phosphate). TCP is an anti-wear agent, but it is also a neurotoxin. Exposure to TCP can cause brain damage that may take weeks or months to fully develop. Also, when oils (and hydraulic fluids) are heated in the air supply system, carbon monoxide gas can be generated. Carbon monoxide basically robs your body of necessary oxygen. This is especially serious in-flight because the air you are breathing already has less oxygen than does the air at ground level.

Is Mobil 254 more toxic than Mobil 291, or the other way around?
It is impossible to answer this question because Mobil Oil provides incomplete information on the toxic contents of its products. Specifically, there are ten different types of the chemical TCP, but Mobil Oil says that only one of them (TOCP) is really toxic. It is true that TOCP is toxic, so it is good that Mobil Oil reports the TOCP content. However, what Mobil Oil does not reveal is that there are five other types of TCP that are five to ten times more toxic than even TOCP. We do not know the content of these super-toxic forms of TCP in any Mobil Oil product. (Other manufacturers are no better.) Mobil Oil simply groups these five super-toxic types of TCP with the remaining four types of TCP that do not seem to cause brain damage, without any indication that they pose a serious health hazard.

Is there a less-toxic alternative?
All engine oils will be toxic to some degree, but products that contain the five super-toxic types of TCP will be especially problematic. We have told Alaska Airlines that they need to pressurize Mobil Oil to fully disclose the contents of their products, and then select less-toxic alternatives. We are not aware of engine oils that do not contain some type of TCPS, and the TCPS could be the super-toxic types. Some hydraulic fluids (e.g., Skydrol 500B-4, Skydrol LD-4) do not contain any TCP, but Alaska does not use these products.

What else do I need to know?
The toxicity of the products that Alaska selects is important. However, AFA emphasizes that it is most important to prevent oils and hydraulic fluids from getting into the air supply system in the first place. Alaska Airlines needs to better address this with changes to the design, maintenance, and operation of their aircraft.

For more information, contact your AFA MEC office.