Can we have the old radios back?

"Interoperability" or operability

There's a big debate among music lovers about whether or not digital media gives the listener as complete a sonic experience as old-time analog equipment – it's the old compact disc versus vinyl record comparison.

What does this have to do with law enforcement you ask? Well the fact is that in some circumstances, it looks like newer isn't always better when it comes to emergency communications.

A situation effecting firefighters in Indiana should be of interest to public safety professionals everywhere.

Millions of dollars were spent on new digital radios for emergency crews in the hopes that the devices would improve communications.

But the new radios are making it harder, if not impossible, for firefighters to hear one another when they need to.

Marion County emergency communications officials say they are confident the digital radios are an upgrade over the older analog technology now in use and began switching to digital earlier this summer.

On the other hand, fire chiefs in the area have written a letter urging the Metropolitan Emergency Communications Agency to allow them to use analog radios when they have to send firefighters into burning buildings. That's not exactly a ringing endorsement of the new gear.

The digital radios let firefighters communicate over wider areas, as they would have to during a natural disaster. However the firefighters' air masks and personal emergency alarms used during calls make digital transmission of their voices unintelligible, a new federal study has found.

"Our worst-case scenario would be a firefighter is in there, gets lost or trapped, and as we're trying to rescue him, he gets low on air and his alarm goes off," Boise (Idaho) Fire Department Captain Paul Roberts, who was involved in testing for the study told reporters with the *Indianapolis Star*.

"We're no longer able to effectively communicate where he's at or where he thinks he's at."

While one of the leading manufacturers of the radios – Motorola – is downplaying the issue, the Plainfield Fire Department has decided to stick with the old analog units. Two other counties in the metro area, Hamilton and Johnson, have held off as they study the issue.

Marion County Director of Public Safety Scott Newman said he's looking into how it might be able to accommodate the fire chiefs, but has yet to determine the best approach.

The chiefs want to be able to use analog at fire scenes and digital for other communication needs.

"We understand that we had to move forward with digital radios, but through training we've done in departments, we feel there is a safety issue," said Dale Henson, head of the Marion County Fire Chiefs Association.

Digital radios transmit through a device called a vocoder, which compresses the signal digitally by picking out the voice from background noises and transmitting just that sound wave.

In normal communication this isn't an issue. But in firefighting situations and other chaotic and noisy incidents, background noises can overpower a voice causing the vocoder to transmit the noise instead.

Two life-saving alarms that firefighters use, one that vibrates in the mask and another that sounds a loud alert, cause similar interference with the digital radios that make communication unintelligible.

"In analog, as the signal degenerates, your mind can still process the info coming in and fill in the blanks," Paul Roberts, who serves as a member of the International Association of Fire Chiefs Digital Problem Working Group, told the *Star*. "With digital, the blanks to fill in aren't even there."

The National Telecommunications and Information Administration study compared digital and analog radios in nine situations. The testing played a radio transmission for listeners surrounded by 80 to 90 decibels of noise, comparable to an idling fire truck. In four of the nine tests done, including two in which alarms were activated, analog outperformed digital.

Motorola, which participated in the study, said it's premature to draw conclusions from the testing.