

[back to article](#)

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Disc rot

CDs, DVDs not so immortal after all

By Peter Svensson
AP Technology Writer

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Dan Koster was unpacking some of his more than 2,000 CDs after a move when he noticed something strange. Some of the discs, which he always took good care of, wouldn't play properly.

Koster, a Web and graphic designer for Queens University of Charlotte, N.C., took one that was skipping pretty badly and held it up to the light.

"I was kind of shocked to see a constellation of pinpricks, little points where the light was coming through the aluminum layer," he says.

His collection was suffering from "CD rot," a gradual deterioration of the data-carrying layer. It's not known for sure how common the blight is, but it's just one of a number of reasons that optical discs, including DVDs, may be a lot less long-lived than first thought.

"We were all told that CDs were well-nigh indestructible when they were introduced in the mid '80s," Koster says. "Companies used that in part to justify the higher price of CDs as well."

He went through his collection and found that 15 percent to 20 percent of the discs, most of which were produced in the '80s, were "rotted" to some extent.

The rotting can be due to poor manufacturing, according to Jerry Hartke, who runs Media Sciences Inc., a Marlborough, Mass., laboratory that tests CDs.

DON RYAN/Associated Press

An old CD, held by Mark Irons in Corvallis, Ore., shows sign of damage. "CD rot" is a gradual-deterioration of the data-carrying layer - it's not known for sure how common the blight is, but it's just one of a number of reasons that optical discs may be a lot less long-lived than first thought.

The aluminum layer that reflects the light of the player's laser is separated from the CD label by a thin layer of lacquer. If the manufacturer applied the lacquer improperly, air can penetrate to oxidize the aluminum, eating it up much like iron rusts in air.

But in Hartke's view, it's more common that discs are rendered unreadable by poor handling by the owner.

"If people treat these discs rather harshly, or stack them, or allow them to rub against each other, this very fragile protective layer can be disturbed, allowing the atmosphere to interact with that aluminum," he says.

Part of the problem is that most people believe that it's the clear underside of the CD that is fragile, when in fact it's the side with the label. Scratches on the underside have to be fairly deep to cause skipping, while scratches on the top can easily penetrate to the aluminum layer. Even the pressure of a pen on the label can dent the aluminum, rendering the CD unreadable.

Koster has taken to copying his CDs on his computer to extend the life of the recordings. Unfortunately, it's not easy to figure out how long those recordable CDs will work.

Fred Byers, an information technology specialist at the National Institute of Standards and Technology, has looked at writeable CDs on behalf of government agencies, including the Library of Congress, that need to know how long their discs will last.

Manufacturers cite lifespans up to 100 years, but without a standardized test, it's very hard to evaluate their claims, Byers says. The worst part is that manufacturers frequently change the materials and manufacturing methods without notifying users.

"When you go to a store and buy a DVD-R, and this goes for CD-R as well, you really don't know what you're getting," he says. "If you buy a particular brand of disc, and then get the same disc and brand six months later, it can be very different."

This renders the frequently heard advice to buy name-brand discs for maximum longevity fairly moot, he says.

DVDs are a bit tougher than CDs in the sense that the data layer (or layers -- some discs have two) is sandwiched in the middle of the disc between two layers of plastic. But this structure causes problems of its own, especially in early

DVDs. The glue that holds the layers together can lose its grip, making the disc unreadable at least in parts.

Users that bend a DVD to remove it from a hard-gripping case are practically begging for this problem, because flexing the disc puts strain on the glue.

Rewriteable CDs and DVDs, as opposed to write-once discs, should not be used for long-term storage because they contain a heat-sensitive layer that decays much faster than the metal layers of other discs.

For maximum longevity, discs should be stored vertically and only be handled by the edges. Don't stick labels on them, and in the case of write-once CDs, don't write on them with anything but soft water-based or alcohol-based markers.

Also, like wine, discs should be stored in a cool, dry place. Koster's friend Mark Irons, of Corvallis, Ore., stored his CD collection in a cabin heated by a wood-burning stove. The temperature would range between 40 degrees and 70 degrees in the space of a few hours. Now, the data layer of some of his CDs looks as if it's being eaten from the outside.

Irons is still pretty happy with CD technology, since it beats vinyl LPs and tape for longevity. Now that he's moved his discs to an apartment with a more stable temperature, he's noticed that the decay has slowed.

"I'm hoping they'll hold out till that next medium gets popular, and everyone gets to buy everything over again," he says.
