



Fact or Fiction?

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Looking for Germs and Cocaine? Check Your Money



Germs

The legal tender in your pocket or purse definitely carries some germs and most likely also has some cocaine. Researchers at the Wright-Patterson Air Force Base in Ohio collected 68 dollar bills from people at a grocery store and a high-school sporting event. According to Dr. Peter Ender, lead researcher, sixty-four (94%) of the bills were contaminated with bacteria known to cause either serious or mild illness. Five bills (7%) were found to be contaminated with bacteria which can cause infections in healthy people. Those bacteria included *Staphylococcus aureus* and *Klebsiella pneumoniae*, both of which can cause pneumonia or blood infections. Fifty-nine bills (87%) were contaminated with bacteria that are usually harmless in healthy individuals, but can still trigger serious illness in those with depressed immune systems, such as individuals undergoing various types of medical treatment or those with HIV.¹ However, Ender stressed that real health risks to the average consumer are pretty low, adding that US dollar bills may be no more or less covered in microbial goo than, say, doorknobs, pens or computer keyboards. But he points out that, unlike many objects, "money tends to move, and US currency, especially, finds its way into all areas of the world." "With the rapid dissemination of money in the era of drug-resistant bacteria, perhaps a resistance clone could be spread from one geographic location to another," he concludes.²

Philip Turner adds, "Many studies, including two of my own, have shown that money can be effective for germ transaction. ABC's 20/20 asked me to help them prepare a segment on this issue, and I devised a plan for collecting money from street vendors, shops, restaurants and other establishments in Chicago, New York City and Washington, DC. After each transaction, the bills received were put directly

into newly purchased wallets, which were then sealed in plastic. The bills were tested and found to be contaminated with germs of fecal, respiratory and skin origin. Although the risk of contracting a serious infection from dirty money is low, the germ count is high enough to make it easy to contract a cold, a bout of diarrhea and similar ailments."³

Depending where you are in the world, you might get a different reaction to this issue. Disease experts in northeastern India issued a recent report that said "overused and soiled" currency can transmit tuberculosis, pneumonia and other lung infections. British health authorities and travel guides regularly warn tourists in the region to wash their hands following every financial transaction.⁴

By contrast, Dr. Frank Vriesekoop, from Ballarat University in Australia, reported that there are generally very few pathogenic bacteria on banknotes and coins. He found low levels of common bacteria on the currency traded through various food outlets in Australia and New Zealand. He claims that it would be impossible for them to cause diseases like diarrhea, vomiting or other gastric symptoms as usually believed, as their numbers were so insignificantly small, and that fears about currency hygiene were unwarranted.⁵

So, what can you do? Well, thorough washing of your hands is most important. Or, you could travel to Japan or Australia. In Japan you can go to a "clean ATM" and get your yen pressed between rollers for one-tenth of a second at 392 degrees, enough to kill many bacteria.

The dirtiness of bills is one reason Australia is leading the charge to use a plastic currency that is supposed to be inhospitable to both germs and counterfeiters and four times as durable as paper notes. Australia introduced the rubber-feeling bills in 1988 and now prints them for

22 other countries, including Romania, Malaysia and Mexico.⁶

Another option is to launder your money - literally, like the Industrial and Commercial Bank of China, which took emergency action in an effort to stop the spread of SARS. They put into effect a policy of holding money for twenty-four hours before recirculating it - long enough for the germs to die. Money is also sterilized by being placed under ultraviolet light for an hour.¹

Or, you could just carry coins. Patricia Gadsby reports that anything that is very hard and dry isn't terribly hospitable to bacteria, and many metals have antibacterial activity.⁷ Pennies often are sterile, presumably due to the copper, and most US coins are also about 75% copper.⁸

Best recommendation is perhaps from Laura Lee, "Then again, none of these extreme measures is really necessary, say the experts. Although the germs on money have the potential to contaminate people, there are no documented cases that it has. Instead of avoiding or cleaning money, the best protection is to wash your hands regularly."¹

Cocaine

"The probability that every single person in the United States is carrying drug-tainted money is almost certain," says Dr. James Woodford, a forensic chemist from Atlanta. Woodford cites a 1989 experiment by Miami toxicologist Dr. William Hearn, who gathered 135 dollar bills from banks in twelve cities. Of these, 131 (97%) had traces of cocaine.

A study conducted at the Houston Advanced Research center in Texas and the Argonne National Laboratory in Illinois examined currency (mostly singles, but also fives, tens and twenties) in Miami, Chicago and Houston. This study found an overall 70 to 80% contamination rate in the

three cities, with single dollar bills more commonly contaminated than the higher denominations. Overall, the more worn the bills, the more coke was found in them. In very old bills, the contamination rate was closer to 90%. A recent look at money circulating in northern Illinois, found even higher rates: close to 93% of the sample, and 100% of \$20 bills tested positive for cocaine. "In fact, most Americans handle small amounts of cocaine every day, not as packets sold by drug dealers, but on the dollar bills that line their pockets." concluded this study.⁶

J. Oyler and colleagues reported that cocaine was present in 79% of currency samples analyzed in amounts above 0.1 microgram and in 54% of the currency in amounts above 1.0 microgram. Contamination was widespread and was found in single dollar bills from a number of US cities. Cocaine amounts were highly variable and ranged from nanogram to milligram amounts. The highest amount of cocaine detected on a single dollar bill was 1327 milligrams. These results indicated that cocaine contamination of currency is widespread throughout the United States.⁹

The reason for this contamination relates to the exchange of illicit cocaine for money by drug dealers. During this exchange there is ample opportunity for paper currency to become contaminated.

Should you worry? Not at all. Cocaine on cash is so commonplace that the courts have ruled that police can no longer use a drug-sniffing dog's signal to nab a suspect or to confiscate money because it's deemed drug-related.⁷ **P&SF**

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Editor's Note: Don't forget to check out Mr. Dini's blog at <http://myblogscience.blogspot.com> for more of his provocative works that might not have appeared in Plating & Surface Finishing.

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