



File # 11-1531

Request for norovirus report

Bill Keene <keene@epilinks.com>

Sun, May 13, 2012 at 7:07 PM

I am attaching the published report. Keep in mind that a lot of the media reports got a bit off topic.

#1. This story has nothing to do with disposable bags, reusable bags, or anything similar. It is about how when norovirus-infected people vomit, they shower their surroundings with an invisible fog of viruses—viruses that can later infect people who have contact with those inanimate objects (fomites). In this case it was a reusable bag AND ITS CONTENTS—sealed packages of Oreos, Sun Chips, and grapes— but it could just have easily been a disposable plastic bag, a paper bag, a cardboard box, the flush handle on the toilet, the sink, the floor, or the nearby countertops. Anything within range of the aerosol fallout.

The people got sick because they ate the food that involved touching the packages that were in the bag. Probably some of them never even touched the bag, but they all touched and ate at least one of the chips, cookies, or grapes. No one else seems to have gotten the story straight so you can still be the first. (Our ex-intern is doing all the interviews, and pretty well, but she is letting the reporters drag her into this irrelevant tangent.)

Although it had nothing to do with THIS outbreak, regular washing of reusable shopping bags is a good idea in its own right. Obviously meat, poultry, and the like should be wrapped in plastic before they go into the checkout bag, but it is reasonable to assume that will become dirty with use.

The real message, if there is one, is 1) don't store food in bathrooms, or, if you must, take it out before people start vomiting or having diarrhea in the room. 2) If you ignore #1, toss any cookies or the like that have been stored there during such a potential invisible exposure. 3) For people with the luxury of multiple bathrooms, try to dedicate one to use by sick people whilst they are vomiting or having diarrhea, and 4) bathrooms used by sick persons should be not only cleaned but "sanitized" with appropriate care (5000 ppm bleach = ~ 10% solution of household chlorine bleach). If you can, wear gloves and a mask while you clean. That means wipe down all the surfaces that people might get their hands on—the toilet seat, the handles, the countertops, the doorknob—all of it.

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Begin forwarded message:

From: "Keene William E" <william.e.keene@state.or.us>

A Point-Source Norovirus Outbreak Caused by Exposure to Fomites

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¹Department of Public Health and Preventive Medicine, Oregon Health and Science University, and ²Oregon Public Health Division, Portland

We investigated a norovirus outbreak (genotype GII.2) affecting 9 members of a soccer team. Illness was associated with touching a reusable grocery bag or consuming its packaged food contents (risk difference, 0.636; $P < .01$). By polymerase chain reaction, GII norovirus was recovered from the bag, which had been stored in a bathroom used before the outbreak by a person with norovirus-like illness. Airborne contamination of fomites can lead to subsequent point-source outbreaks. When feasible, we recommend dedicated bathrooms for sick persons and informing cleaning staff (professional or otherwise) about the need for adequate environmental sanitation of surfaces and fomites to prevent spread.

Noroviruses are a leading cause of gastroenteritis worldwide and the most common cause of foodborne outbreaks in the United States [1, 2]. The low infectious dose and the high viral load in vomit and feces [3] lead to efficient transmission through typical fecal-oral routes as well as airborne spread and environmental contamination of fomites [4]. Persistent, multigenerational outbreaks have been linked to fomites and reported on cruise ships [5], hotels [3], and institutional settings [3, 6] despite aggressive housekeeping [7], and point-source outbreaks from fomes exposure are rarely identified [8]. The role of fomites in transmission can be difficult to assess owing to lack of established protocol for testing fomites and environmental surfaces. We investigated a point-source norovirus outbreak caused by exposure to fomites.

In October 2010, the Oregon Public Health Division was notified by colleagues from public health agencies in

Washington State that a parent-chaperone had reported a cluster of acute gastroenteritis among persons who had recently participated in a soccer tournament held in King County, Washington. The weekend tournament comprised about 2000 children in approximately 120 teams from Washington and Oregon. The Oregon group comprised 17 Oregon girls who were 13–14 years old and 4 adult chaperones who had traveled to the tournament on Friday afternoon in private automobiles. They shared rooms at a hotel in Washington on Friday and Saturday nights, eating at local restaurants and in their hotel rooms, and they returned to Oregon after the tournament ended on Sunday afternoon. We investigated to determine the scope of the outbreak and its etiology and to take appropriate control measures.

METHODS

Tournament organizers and contacts for other teams were canvassed by telephone and email to determine the extent of illness. Complaint logs were reviewed for reports of any contemporaneous illness among patrons of the restaurants and hotel visited by the Oregon group. This was a public health investigation to control a disease outbreak and therefore did not require approval by an institutional review board.

We conducted a retrospective cohort study of the Oregon group. Persons were interviewed by telephone or in person using a standardized questionnaire with questions about potential exposures (foods, hotel roommates, travel partners, etc), clinical history, and contemporary household illness.

A case was defined as a delegate of the Oregon group who developed vomiting or diarrhea (≥ 3 loose stools within a 24-hour period) within 72 hours of their return from the tournament. Household members of cases who developed similar symptoms within the following week but who did not attend the tournament were considered secondary cases.

Risk differences were calculated for all exposures using EXTSIG and CID2BP software (MD Anderson Cancer Center, The University of Texas) with Cox-Snell 95% confidence intervals {CIs} and Fisher exact test P values [9]. Relative risks (not presented) are less informative due to small sample size and zero-count cells.

Stool specimens were solicited from persons who reported illness. A reusable grocery bag was tested for norovirus by vigorously swabbing small patches (~ 25 cm²) of the bag surface with sterile polyester swabs wetted with sterile nuclease-free water. The swabs were extracted using the MagAttract viral

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M48 RNA kit (Qiagen 955235) on an automated BioRobot M48 Extractor. All specimens were tested for the presence of norovirus RNA genogroups GI and GII by real-time reverse-transcriptase polymerase chain reaction [10, 11] and were further characterized using genetic sequencing of region C of the *ORF2* gene [12].

RESULTS

There were no reports of similarly clustered illness among any other teams at the tournament, nor were there any coincident reports of illness among patrons of any of the restaurants or hotel patronized by the Oregon group.

All 21 members of the group were interviewed; however, 1 healthy person refused to answer exposure questions and 1 ill person was excluded due to direct exposure to case 1 and her vomit. We identified 7 cases who ranged from 13 to 48 years old (median, 13). All 7 (100%) reported vomiting; 4 (57%) also reported diarrhea. The reported duration of symptoms ranged from 1 to 7 days (median, 3). One case sought medical care, but there were no hospitalizations. There were no reports of mild illness not meeting the case definition. We identified at least 5 presumptive secondary infections among household members.

Case 1 initially became nauseated and developed abdominal pain late Saturday evening, at which time she left her room and moved in with one of the chaperones. Shortly after midnight, she began vomiting and having diarrhea that continued throughout the night. In the morning she was taken back to Oregon by this chaperone, who later became ill. Neither individual rejoined the group or participated in any of the Sunday group activities or meals; both were excluded from analysis for Sunday exposures. All other cases reported symptom onset on Tuesday (Figure 1).

The following variables were assessed for association with illness: age; hotel roommates and hotel room; transportation groups for activities, soccer games, and car groups returning

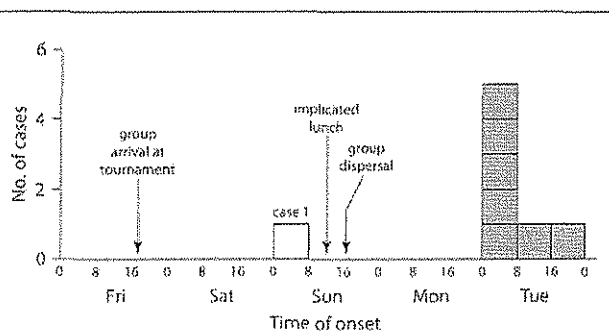


Figure 1. Epidemic curve of gastroenteritis among attendees of a soccer tournament in Washington in October 2010. Presumptive secondary infections are not shown.

from the tournament; and all reported food exposures on Friday, Saturday, and Sunday. Logistic modeling was not possible due to small sample size. No significant association with illness was identified for any Friday or Saturday exposure. On initial analysis, consumption of sealed packaged cookies from the Sunday lunch was significantly associated with illness (risk difference [RD], 0.750; 95% confidence interval [CI], .24–.91, $P = .01$); 3 of 7 cases (43%) and none of the 12 healthy attendees reported cookie consumption. The cookies and other lunch supplies had been purchased in Oregon and stored at the hotel until use.

On reinterview, we learned that the cookies, along with packaged chips and fresh grapes, had been stored in a reusable open-top grocery bag made from laminated woven polypropylene. This bag had been stored in the hotel bathroom of the chaperone who had cared for case 1. Case 1 reported never touching or handling the grocery bag, but it was in the bathroom she used throughout the night. At lunchtime on Sunday—hours after case 1 had departed—the bag was taken to another hotel room where the contents (cookies, chips, and grapes) were passed around as part of the lunch. The cookies and chips were in unopened commercial packages. We did not ascertain how many Oregon group members handled the grocery bag. Illness was associated with a composite exposure variable of any item in the bag (ie, cookies, chips, or grapes; 7 of 7 cases with exposure and 4 of 12 controls with exposure; RD, 0.636; 95% CI, .52–.87; $P < .01$). No single item in the bag was reportedly consumed by more than 4 of 7 cases. Assuming exposure at the Sunday lunch, incubation periods ranged from 36 to 57 hours (median, 38.5 hours).

All 3 stool specimens collected from ill persons were positive for norovirus (genotype GII.2). No specimen was available from case 1. Viral sequences from the 3 stool specimens were identical and a 98% match to a GII.2 reference sequence (GII.2.Vaals NLD05). Two of 10 swabs taken from the grocery bag 2 weeks after the implicated meal were positive (genogroup GII). The grocery bag samples were insufficient to sequence; no leftover food was available.

There were no reports of subsequent illness among guests or staff reported to hotel management.

DISCUSSION

Initial concerns that this outbreak may have involved other persons from the tournament or local restaurant patrons were quickly allayed. The distribution of incubation times for the Oregon group indicated that the larger group was exposed at the Sunday lunch. By that time, however, case 1 had been absent for over 12 hours, and because she had no contact with any of the other cases after her onset of vomiting or diarrhea and no direct contact with any of the lunch food, it was initially unclear as to

how these illnesses could be connected. Only when we learned about the bag in the bathroom did a coherent story emerge.

The data indicate that virus aerosolized within the hotel bathroom settled upon the grocery bag and its contents, and it was touching the bag and consumption of its contents that led to the outbreak. Touching the bag could not be analyzed separately from consumption of food items from within the bag. Consumption of food from the grocery bag was strongly associated with illness, as was handling the grocery bag. The nature of the contaminated foods—a bag of chips, grapes, and a package of cookies—facilitated transmission. Fingers contaminated with norovirus have been shown to sequentially transfer virus to up to 7 clean surfaces [7], and environmental contamination with transmission via fomites has been documented [7, 8]. Incidentally, this also illustrates one of the less obvious hazards of reusable grocery bags.

Aerosolization of vomit and feces has been demonstrated to be of major importance in norovirus outbreaks [13]. Even viruses aerosolized from flushing a toilet can contaminate surfaces throughout a bathroom [14]. Once a fomite is contaminated, transfer to hands and other animate objects can readily occur [15]. The more confined the space (eg, most bathrooms), the more intense would be the “fallout” [13].

This investigation confirms the potential for aerosol contamination of fomites in norovirus outbreaks, which has long been suspected to contribute to persistent problems on cruise ships, in nursing homes, and other settings [5, 6, 13]. Although we certainly recommend not storing food in bathrooms, it is more important to emphasize that areas where aerosol exposures may have occurred should be thoroughly disinfected; this includes not only exposed surfaces but also objects in the environment that could serve as fomites. If multiple bathrooms are available, it would be prudent to dedicate one for use by sick persons. We also recommend that persons with responsibilities for cleaning (eg, housekeeping staff or family members) be informed about incidents of vomiting or diarrhea and best practices for disinfection.

Notes

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Potential conflicts of interest. All authors: No potential conflicts.

All authors have submitted the ICMJE Form for Disclosure of Potential Conflicts of Interest. Conflicts that the editors consider relevant to the content of the manuscript have been disclosed.

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Don't Be Fooled by Reusable Bag Norovirus Scare

Posted By [Beth Terry](#) On May 11, 2012 @ 4:36 pm In [Plastic Bags](#) | [23 Comments](#)

[1]



[1]It's been all over the news for the past two days: Six Oregon girls, travelling to an out of town soccer tournament in Seattle, all got sick with norovirus after passing around cookies in a reusable bag. Scientists from the Oregon Public Health department did some sleuthing and traced the virus to the reusable bag. ([Read the full story on OregonLive.com](#) [2].) So, does that mean that reusable bags are dangerous? The disposable bag industry would like you to think so. Hilex Poly, the plastic bag manufacturer that [mislead consumers about plastic bag recycling rates](#) [3] in December, sent out this gem to its subscribers yesterday:

bag 
the ban.

Say no to bans and taxes on your grocery bags.

Norovirus in reusable bags -- and LA still wants bag ban

It's official: Oregon scientists have concluded that an outbreak of the dangerous norovirus was [traced back to a reusable bag](#).

Members of a girls' soccer team -- 13- and 14-year-olds -- became mysteriously sick at a tournament back in 2010. And scientists now know why: people were eating cookies from a reusable bag contaminated with the same virus that annually causes nearly 21 million illnesses nationwide.

And even in the face of all this, Los Angeles is still considering banning plastic and paper bags -- forcing Californians to carry their groceries in the very same kind of bags that got the girls sick.

[Send a letter to Mayor Antonio Villaraigosa today. Tell him that a bag ban is the wrong choice for LA.](#)

Plastic bags aren't just the sanitary alternative, they're the environmentally friendly alternative too. They're 100% recyclable (many reusable bags aren't); they're also used every day in dozens of ways. Plastic bags can be used for trash can liners, for pet waste, for storage around the home -- and then recycled into items like park benches and playground equipment.

[Contact Mayor Villaraigosa today.](#) Tell him that there's a clean, recyclable alternative to germ-y reusable bags -- but there won't be for long if he doesn't stop the bag ban.



Bag the Ban is brought to you by the people of Hilex Poly, a global leader in plastic bag recycling and manufacturing.

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[Unsubscribe](#)

[4]

Hilex Poly uses bogus scare tactics to discredit reusable bags

Hilex Poly wants you to believe that reusable bags are dangerous because they can carry

viruses. But let's look at the actual facts of the case before jumping to that conclusion.

- 1) The first girl who came down with norovirus had not touched the reusable bag when she got sick. In fact, no one knows how she contracted the virus. But after getting sick, she spent 6 hours in her chaperon's bathroom having diarrhea and throwing up. Her chaperon then drove her back home to Oregon.
- 2) The reusable bag happened to be in the chaperone's bathroom while the girl was in there being sick.
- 3) On Monday, another girl saw the bag in the bathroom and brought it to lunch filled with store-bought cookies that had never been opened.
- 4) The girls passed the bag around, and all of them got sick.

To me, several things are clear from the facts of the case:

- 1) The reusable bag full of cookies was not contaminated until it spent 6 hours in a bathroom with a sick puking girl. I would imagine that most of the objects in that bathroom were contaminated at that point.
- 2) If a disposable plastic bag had been in that bathroom, it probably would have been contaminated too. Hilex Poly's conclusion that disposable plastic bags are safer than reusable bags is unfounded. As Stiv Wilson from [5 Gyres](#) ^[5] pointed out in an email, both kinds of bags are made of plastic. The reusable bag the girls passed around was made from polypropylene, so it's not like we're comparing plastic and some other natural material here.

My conclusion is that this story really has nothing to do with disposable vs. reusable bags.

The study simply proves that norovirus can be passed via inanimate objects, and in this case, the object just happened to be a reusable bag, but it could have been a disposable bag, or a door knob, or a keyboard. To quote the article:

That confirmation marked a breakthrough: Scientists have long known that this hardy virus is transmitted from person to person but never before have they been able to prove that transmission from an inanimate object caused an outbreak.

'In other outbreaks, we have been able to isolate the virus from door handles or keyboards, but we have never been able to show it was the keyboard or door handle that made people sick,' said Kimberly Repp, epidemiologist with the [Washington County Department of Health and Human Services](#) ^[6].

What's more, asked whether she would advise against reusable bags,

Repp does not recommend that consumers ditch reusable grocery bags. But she says they should be cleaned with sanitizing wipes or in the washing machine after traveling to a store.

'You wash your clothes after you wear them,' she said. 'Wash your bag after you use it.'

And perhaps more to this particular point, as [Alice Park from TIME concludes](#) ^[7], keep your grocery bags and food out of your bathroom. Duh.

A Few More Reusable Bag Safety Tips

Whether your reusable bag is made from plastic, cotton, hemp, or any other material, you should wash it regularly. And that goes for reusing disposable plastic bags too. The plastic bag industry likes to insist that disposable plastic bags can be reused. If that's the case, then they should be washed too. The point is not that reusable bags are somehow more prone to breeding microbes but that all objects can pick up germs from being used over and over again.

Next thing you know, companies will be touting disposable underwear because cloth undies can carry germs.

It doesn't take much effort to wash reusable bags. Hand or machine washing can reduce the number of bacteria in reusable bags by >99.9%, according to a [2010 study](#) [8] of bacteria in reusable bags.

Keep meat and fish separate from produce and other foods. As many of you know, we buy meat for our cats in a big stainless steel pot. What you may not know is that we have designated one particular reusable bag to carry the pot. We don't ever use that bag for other kinds of groceries.

Tell Mayor Villaraigosa the truth!

Hilex Poly is urging its supporters to write to LA's Mayor Villaraigosa to oppose the proposed plastic bag ban. That means that WE need to explain why these scare tactics will not work and why reusable bags are not a public health threat. Environment California has a [form letter](#) [9] on its site that is easy to fill out. Whether you are an L.A. resident or not, please take a minute to use the form to explain the plastic bag industry's misleading tactics and urge the mayor to support the plastic bag ban.

Have a great weekend!

[1]

Article printed from My Plastic-free Life | Less Plastic | Life without Plastic:
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URL to article: <http://myplasticfreelife.com/2012/05/dont-be-fooled-by-reusable-bag-norovirus-scare/>

URLs in this post:

[1]:

<http://myplasticfreelife.comhttp%3A%2F%2Fmyplasticfreelife.com%2F2012%2F05%2Fdont-be-fooled-by-reusable-bag-norovirus-scare%2F>

[2] Read the full story on OregonLive.com:

http://www.oregonlive.com/health/index.ssf/2012/05/in_a_first_oregon_scientific_s.html

[3] mislead consumers about plastic bag recycling rates:

<http://myplasticfreelife.com/2011/12/plastic-bag-manufacturer-misleads-public-about-recycling-rates-heres-the-truth/>

[4] Image: <http://myplasticfreelife.com/wp-content/uploads/2012/05/Hilex-Poly-norovirus-reusable-bag-scare.gif>

[5] 5 Gyres: <http://5gyres.org>

[6] Washington County Department of Health and Human Services:

<http://www.co.washington.or.us/HHS/>

[7] Alice Park from TIME concludes: <http://healthland.time.com/2012/05/10/why-you-shouldnt-keep-your-grocery-bag-in-the-bathroom/>

[8] 2010 study:

http://www.uanews.org/pdfs/GerbaWilliamsSinclair_BagContamination.pdf

[9] form letter: <https://secure3.convio.net/engage/site/Advocacy?cmd=display&page=UserAction&id=5081>

File #11-1531

Spoutingoff's Blog

Mark Gold's
response

(Heal the Bay)

Masters of the Obvious

Posted on June 24, 2010 by spoutingoff



(http://spoutingoff.files.wordpress.com/2010/06/toy-not-a-bag_cropped_800x632.jpg) Today, in a study bought and paid for by the American Chemistry Council (ACC), earth-shattering findings were released to the public. Unwashed reusable bags can be contaminated with a variety of bacterial pathogens, including Salmonella. Bag bacteria counts are especially high when you allow meat and chicken to incubate in the trunk of a car where temperatures can get nice and toasty. I wonder how much the ACC paid for this ground-breaking research to point out the obvious.

But give credit where credit is due, at least the ACC hired a professor with a strong scientific reputation, Chuck Gerba from the University of Arizona. Gerba has done a number of these studies and I seem to remember him comparing kitchen counter and sink sponge pathogen levels to toilet bowls. Guess which surfaces were more contaminated? Don't use that kitchen sponge for too long!! Gerba's research points out that hygiene is a critical element for public health protection, but it certainly didn't advocate for continued reliance on single-use plastic bags to protect public health. I've yet to see a Samonella, E. coli 0157 or cholera outbreak in a country that has banned or put a fee on plastic bags (although wait for the ACC to blame the next bird flu outbreak in China on their plastic bag ban!).

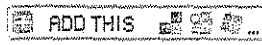
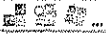
The study points out what we all know. Wash your bags periodically and don't put raw chicken and meat with the rest of your groceries. I've been using reusable bags for years, but I still put my produce and meat in separate plastic bags. The study's accompanying poll reminds us that many people just don't use common sense when it comes to protecting public health. That's why plastic bags often come accompanied with warnings such as, "This bag is not a toy!" In a liability driven world, those words of warning became necessary because one toddler too many was left to play with a plastic bag. However, no one supporting [AB 1998](#)

(<http://www.healthebay.org/actionalerts/ab1998/default.asp>) is asking for a plastic bag ban because of suffocation risk.

Today, the L A Times joined the growing ranks of newspapers that have strongly endorsed AB 1998 (<http://www.latimes.com/news/opinion/editorials/la-ed-bags-20100624,0,7190647.story>), and the first senate committee (Environmental Quality) vote is scheduled for Monday, so the release of the ACC study could not have been more perfectly timed by AB 1998 opponents. But the fact the ACC paid for such a study tells you how desperate they are getting. Of course the bill authors and supporters (including the grocers, grocers' union, retailers and environmental community) took these concerns into account. That's why the bill doesn't apply to plastic bags used for produce and meats.

Final words of incredibly obvious advice: 1) Wash your bags with soap and hot water; 2) Don't put raw meat and chicken or even produce in your reusable bag; and 3) Don't eat, lick or otherwise taste your reusable bag. These words of wisdom are right up there with: 1) Wash your hands with potable water and soap after you go to the bathroom; 2) Cover your mouth when you cough and sneeze; 3) Stay home when you have a fever; and 4) Remember, wear clean underwear each and every day!

If everyone follows these words of wisdom, we will live in a much healthier world. And that advice is not brought to you by the ACC.

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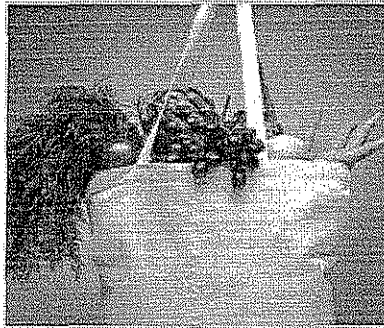
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SAFETY & RECALLS

Can reusable grocery bags make you sick, or is that just baloney?

Jul 22, 2010 1:24 PM

An old saw in the news business is "consider the source" – in other words, take into account not just what you're hearing, but where it comes from. Which is why we're not so swayed by a recent report about reusable grocery bags and their potential to make you sick.



The report came out of the University of Arizona, Tucson and Loma Linda University in California. Smack on page one is this note: "The authors would like to acknowledge and thank the American Chemistry Council for providing funding to support this study."

The American Chemistry Council is the trade group that advocates on behalf of plastic-bag manufacturers. Now why would the folks who make plastic grocery bags want to cast doubts on the safety of reusable grocery bags? Oh, right.

And it worked, sort of. The way it played in the media was that reusable grocery bags may be good for the environment, but you're taking your health in your hands every time you, you know, reuse one, because the bags can harbor e coli and other bacteria.

That soundbite was based on the report's analysis of 84 reusable grocery bags collected in California and Arizona. Yup, just 84. We have a colleague who grew up with 10 sisters and brothers. A single weekly shopping trip for his family could easily net 20 bags of groceries, so 84 doesn't really seem like an adequate sample size for a scientific study.

The researchers tested for pathogenic bacteria *Salmonella* and *Listeria*, but didn't find any, nor did they find strains of *E. coli* that could make one sick. They only found bacteria that don't normally cause disease, but do cause disease in people with weakened immune systems.

Our food-safety experts were underwhelmed as well. "A person eating an average bag of salad greens gets more exposure to these bacteria than if they had licked the insides of the dirtiest bag from this study," says Michael Hansen, senior staff scientist at Consumers Union. "These bacteria can be found lots of places, so no need to go overboard."

But Hansen notes that there are some reminders to take away from the study. It's easy to spread bacteria from meat, fish, or poultry to other foods – in your kitchen or in your grocery bags. So we do think it's wise to carry those items in disposable bags. Reusable bags are fine for most everything else, but it's a good idea to wash them occasionally.

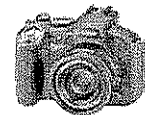
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