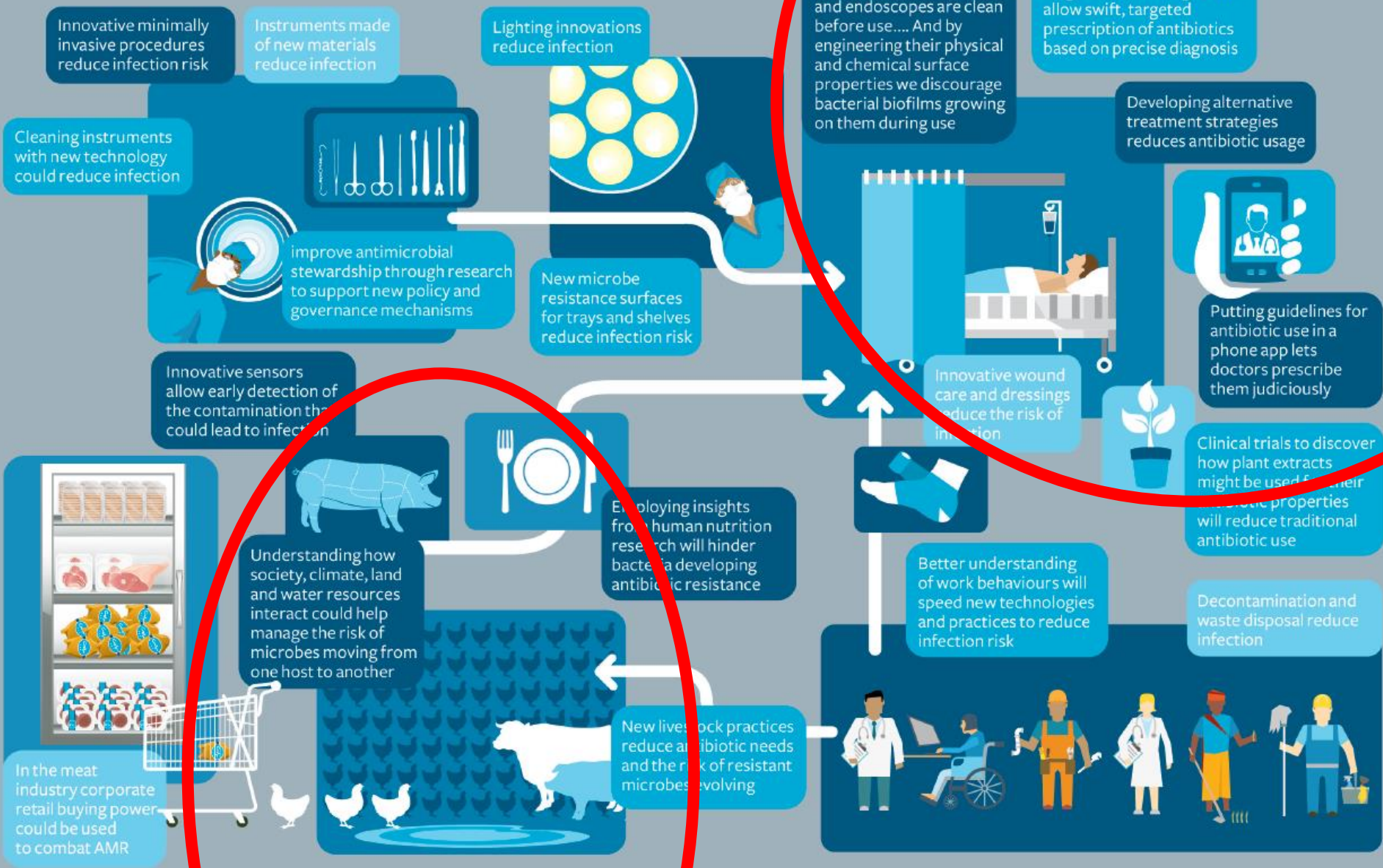


Cold water cleaning

Timothy Leighton FREng FRS

NAMRIP: Innovation and approach

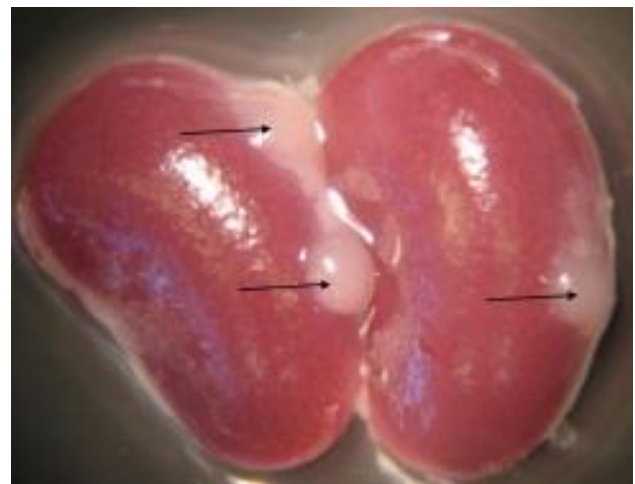


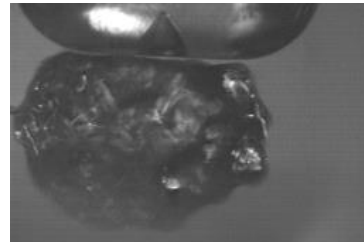
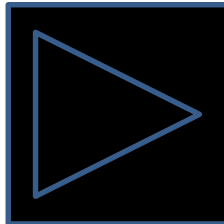
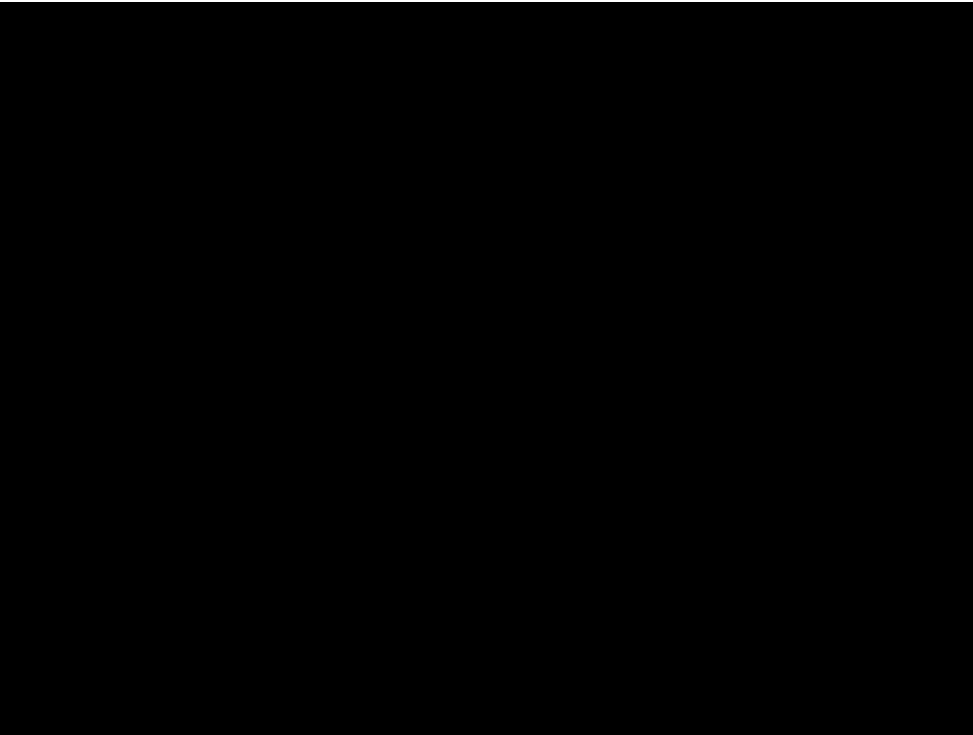
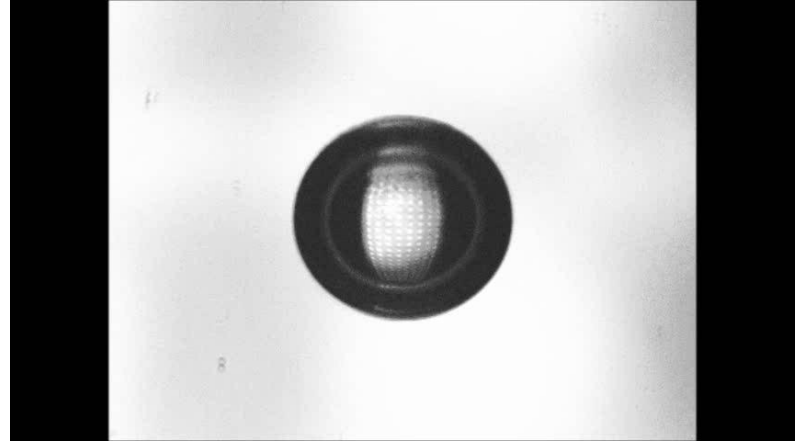
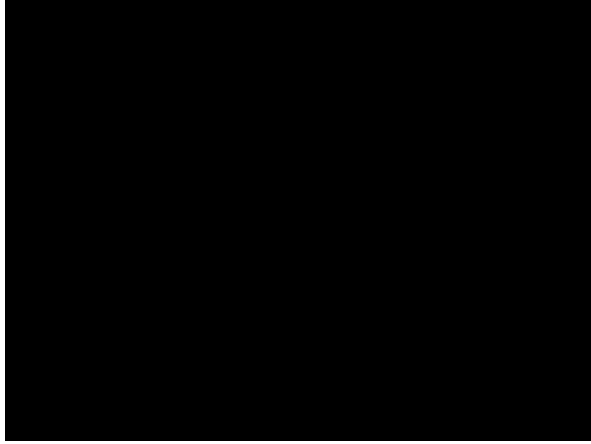
=The safety barriers cleaning can put in place

Cleaning baths and pressure washers:

Size, soup,

spray, shred





The Royal Society Brian Mercer Award for Innovation 2011

Cold water cleaning:

No additives, no heating

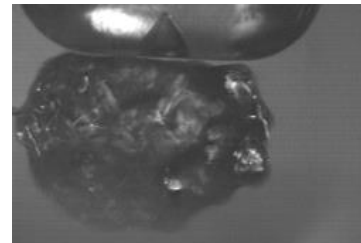


Goal:

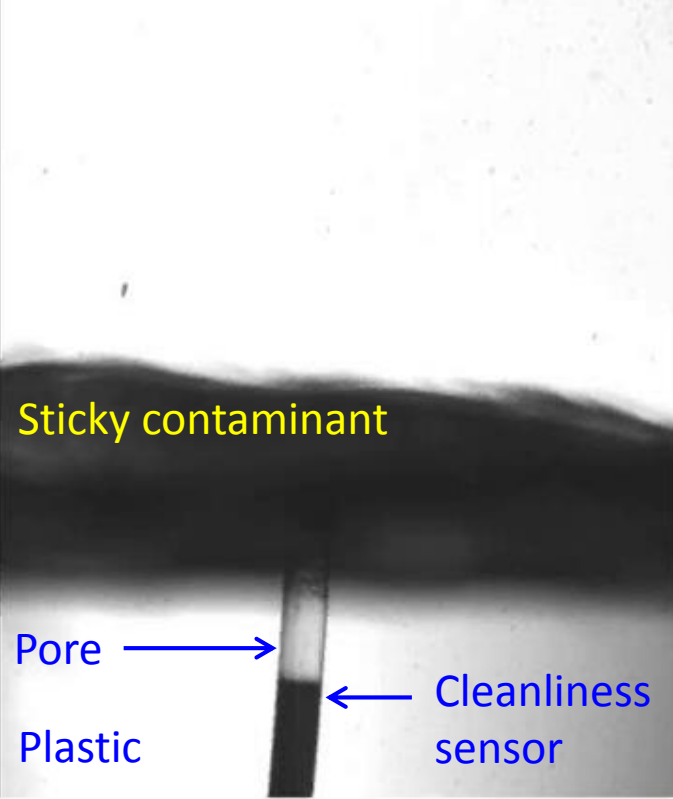
To save 80% electricity

80% water

100% additives

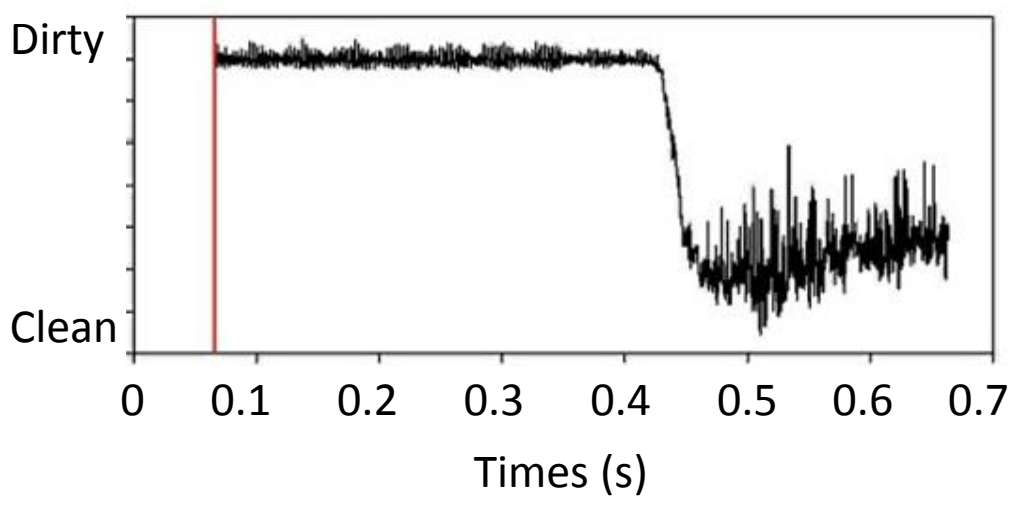


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1/44000 sec
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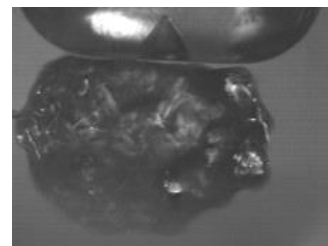


The Royal Society Brian Mercer Award for Innovation 2011

Cold water cleaning:
No additives, no heating



Goal:
To save 80% electricity
80% water
100% additives



The Royal Society Brian Mercer Award for Innovation 2011

Cold water cleaning:

No additives, no heating

Go to

<https://www.youtube.com/watch?v=Xhvv9L5hvvM> to see this
video run

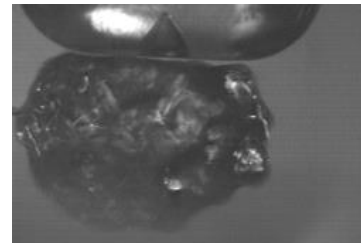


Goal:

To save 80% electricity

80% water

100% additives



To see examples of videos, go to

<http://www.southampton.ac.uk/engineering/research/projects/starstream.page>

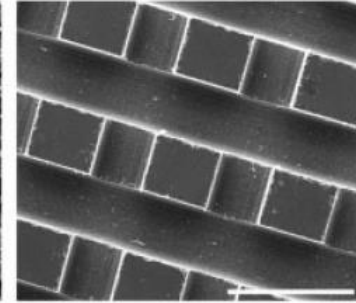
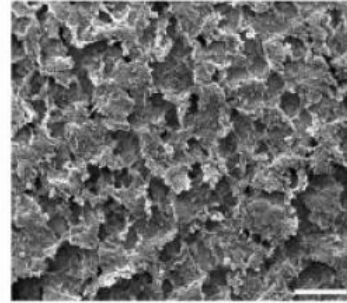
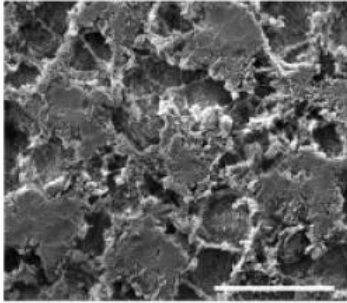
For publications go to <https://www.researchgate.net/project/Cold-water-cleaning>

Before...

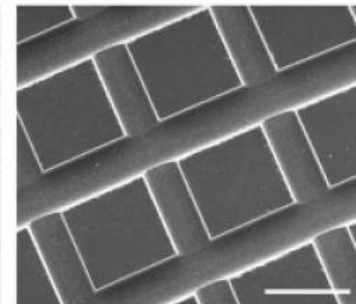
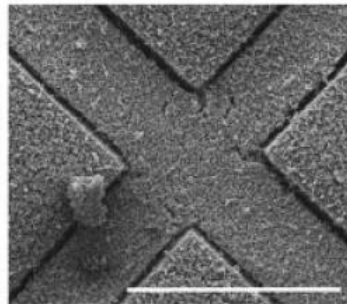
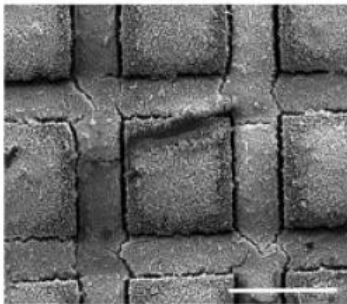
Water wash...

StarStream (cold water and no additives)

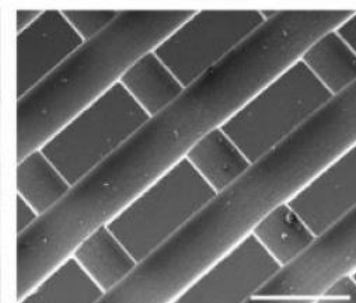
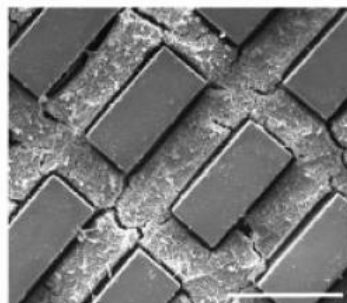
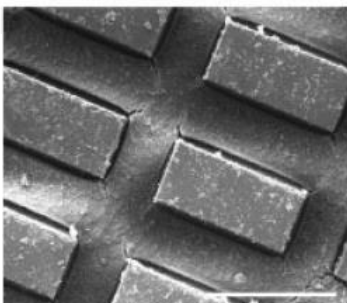
[Streptococcus mutans](#)
(tooth decay)



[Actinomyces naeslundii](#)
(gum disease, dental plaque)



[Streptococcus oralis](#) (gum disease, dental plaque)



S. mutans



Scale bar=500 microns

(Rob Howlin and Paul Stoodley)

Grafting bone between people for reconstructive surgery



No wash



1 week
 H_2O_2



20 min
 H_2O_2



20 min
StarStream



(Jon Dawson &
Richard Oreffo)

I clean salad with cold water

Dole Foods withdraws salad in Canada, U.S. in deadly listeria outbreak



By Andrew Russell

National Online Reporter Global News

Comments 5 Facebook 16.7k Twitter Email Print



One person has died and 12 others have been hospitalized after an outbreak of Listeria linked to Dole packaged salads.

[click](#)

Two die in E. coli outbreak linked to salad leaves

By PRESS ASSOCIATION

PUBLISHED: 14:04 EST, 18 July 2016 | UPDATED: 14:04 EST, 18 July 2016

[click](#)

Share 13 shares

Two people have now died after becoming infected with E. coli that may be linked to eating mixed salad leaves.

Public Health England (PHE) is investigating an outbreak of E. coli O157, which has so far affected 151 people, mainly in the South West.

There have been 144 cases in England, six in Wales and one in Scotland. PHE did not say where the two people died.

Packaged salad listeria outbreak kills 1 in Macomb Co.



Ann Zanilewski, Detroit Free Press Education Writer

8:00 p.m. EST January 22, 2016



(Photo: Getty Images/iStockphoto)

One Michigan resident has died and three others fell ill as part of a listeria outbreak in six states linked to Dole packaged salads.

Officials are working to identify the source of the contamination and urging people to throw away salads that could be affected.

Twelve people in six states — Michigan, Indiana, Massachusetts, New Jersey, New York and

Pennsylvania — have been infected with the outbreak strain of Listeria monocytogenes since July 5, according to the Centers for Disease Control and Prevention.

The sole death was a person who lived in Macomb County. That person's name, age, gender and hometown have not been publicly released because of confidentiality rules, said Angela Miniucci, spokeswoman for the Michigan Department of Health and Human Services.

Although the outbreak began in July, officials were not able to isolate its source until January.

The outbreak was traced to a Dole processing facility in Springfield, Ohio. Dole has since shut down the facility and is withdrawing all packaged salads that were produced there, according to the CDC.

Officials are now hunting for the source.

"I liken this to a sort of food safety 'CSI.' It sometimes takes a while to identify a source of contamination, and sometimes a source is never identified," said Jennifer Holton, spokeswoman for the Michigan Department of Agriculture and Rural Development.

MORE STORIES



Prosecutor Kym Worthy to push no-parole sentences for 60

July 23, 2016, 7:14 a.m.



Former Allen Park mayor Levon King, wife die in small plane crash

July 23, 2016, 12:10 a.m.

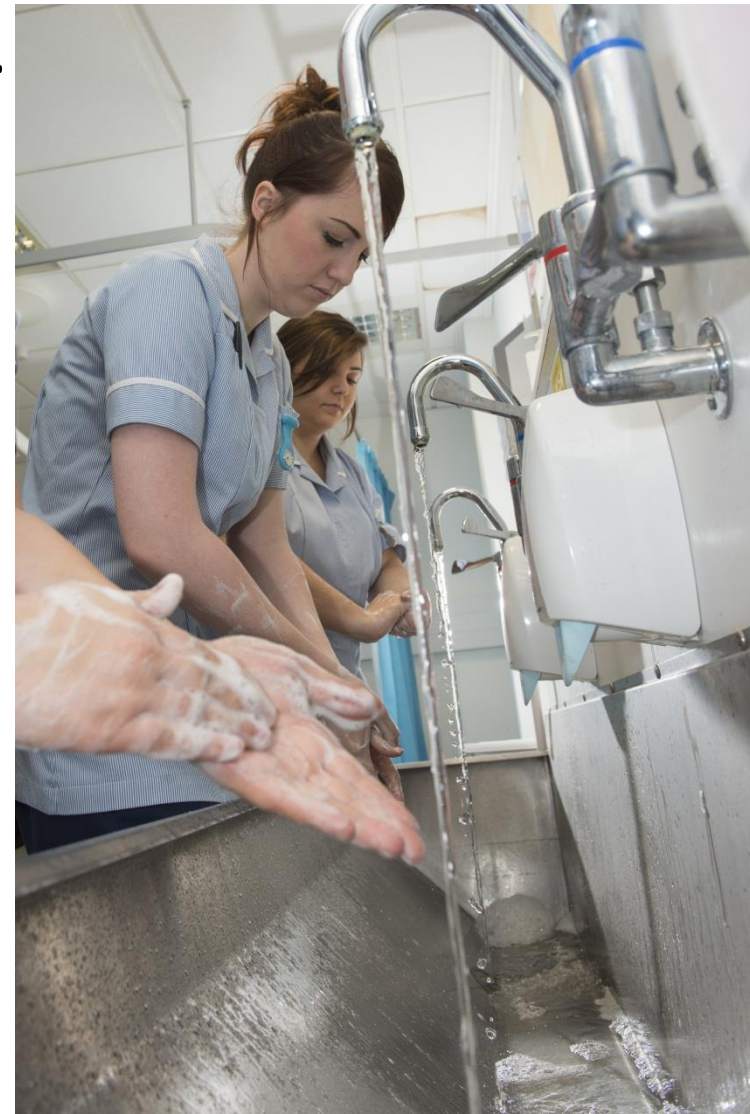


Suspect held in 2014 Monroe County slaying of Chelsea Bruck

July 23, 2016, 12:04 a.m.

[click](#)

The Centre for Disease Control recommends hands be washed for 20 s in warm soapy water.



In the UK the average wash is for 6s, often in cold water.



Goto <http://www.southampton.ac.uk/engineering/research/projects/starsaver.page> to see video



In independent tests for cleaning surgical instruments and dental tools, StarStream achieved:

- 79-97% energy savings
- 83-99% water savings
- 100% additive saving
- Times: 150-300% worse



Cold water cleaning

The end