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# A comparison of Dish Cloths in Domestic and Commercial Food Premises

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# Why do the research?



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- Dish cloths are associated with cross-contamination
- Food poisoning is grossly under reported
- Majority of outbreaks in UK affect single households

# The Aim



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- To find out the microbiological quality of cloths in domestic and commercial settings
  - Identify if one area presents a greater risk
  - Highlight the risk of cross-contamination
  - Highlight the importance of regular disinfection and/or disposal
  - Identify trends between cleaning regimes and microbiological quality.

# Survey and Methodology



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- Dish cloths sampled
  - 51 domestic
  - 51 commercial
- Test for
  - Coliforms
  - Salmonella
  - Listeria
  - Staphylococcus

# Survey and Methodology



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- Questionnaire
  - Type of cloth
  - How often are disposable cloths replaced?
  - How often are reusable cloths disinfected?
  - How are the cloths cleaned?
  - Is the cloth used in a RTE prep area?
  - What is the cloth used for?

# The Microbiological Quality of Cloths Used in Restaurants and Take-Aways



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## INTRODUCTION

There are a wide variety of types of cleaning cloths (both reusable and disposable) used within restaurants and take-away catering outlets and these cloths are frequently found to be contaminated with *E. coli*, *Listeria* spp. and Enterobacteriaceae and are commonly associated with cases of poor hygiene and cross contamination.

Cloths are frequently used in both raw and ready-to-eat food areas and may be important reservoirs of bacteria for contamination of the hands of catering staff, work surfaces and equipment.

More information on the types of cloths being used in different premises as well as on the practice of cleaning or disposal of these cloths may provide vital information for reducing the risks of cross-contamination in catering premises.

## MATERIALS & METHODS

This study examined the microbiological quality of cloths used in restaurants and take-away catering outlets to determine whether the good hygiene practice is applied in the use of these cloths and if these cloths pose a risk of cross contamination. The study also aimed to establish recommendations on cleaning cloth hygiene to assist Food Business Operators and enforcement officers in ensuring food safety. Kitchen cloths used in restaurants and take-away catering outlets were taken at any time of the day, or on any day of the week. Information was recorded on the type of cloth, how these cloths are used and cleaning procedures.

## RESULTS

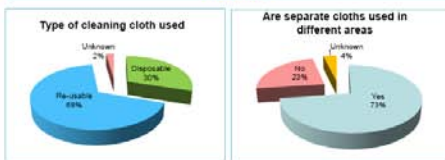


Figure 1. Type of cleaning cloths used by take-aways and restaurants surveyed in the North East of England

There still exists a preference for reusable cloths within the take-away and restaurant industry with 68% of those surveyed using re-usable cloths. While the majority of these premises use separate cloths for separate areas within the kitchen there are still a number of premises that use the same cloth in all areas. 77% of those premises that do not have separate cloths for separate area in the kitchen did prepare raw food on those premises.

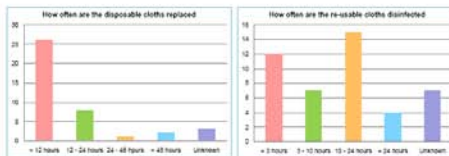


Figure 2. Frequency of disinfection/disposal of cloths in take-aways and restaurants surveyed in the North East of England

Disposable cloths appear to be replaced frequently by the majority of premises surveyed (26%) although it is a concern that 8% of premises used these disposable cloths for greater than 48 hours and some (15%) did not know how often the disposable cloths were replaced. There appears to be no consistent approach to the disinfection of re-usable cloths in the premises surveyed or the methods of disinfection. 8% of the premises surveyed used the same re-usable cloth in raw and ready to eat areas, of these 40% did not know how often the cloth was cleaned, 30% cleaned the cloths > 10 hours and only 30% cleaned these cloths < 3 hours.

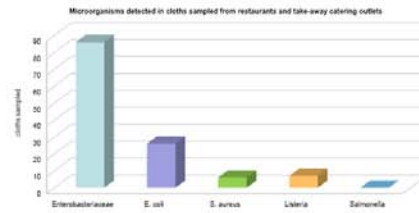


Figure 3. Microorganisms detected in cleaning cloths used by take-aways and restaurants surveyed in the North East of England

Enterobacteriaceae were found in 86 (65%) of cloths sampled of which 73 (85%) had counts above  $10^4$  and 37 (43%) had counts above  $10^6$ . *E. coli* was found in 21 (16%) of cloths tested 20 of which were in cloths that were shown to contain greater than  $10^4$  Enterobacteriaceae. *S. aureus* was found in 6 cloths tested (4.5%) all of which Enterobacteriaceae were present and 3 had *E. coli* present. 5 cloths (4%) had *Listeria* species present all of which also had Enterobacteriaceae present. Of the 5 samples with *Listeria* 3 were found to be *Listeria monocytogenes* (2 serotype 1/2c, 1 serotype 1/2a). *Salmonella* was not found in any of the cloths examined.

Table 1 Summary of samples tested (n = 133)

Cloth type	Satisfactory	Unsatisfactory
Re-usable (n = 90)	33%	67%
Disposable (n = 40)	65%	35%
Unknown (n = 3)	0%	100%

## DISCUSSION

Of 133 cloths sampled 56% were found to be of an unsatisfactory microbial standard. 106 cloths (80%) were used in premises where raw and ready-to-eat food are being prepared and of these 24 (23%) cloths were being used both within raw and cooked food areas. Hygiene practices continue to be a problem with cloths used in take-aways and restaurants and while a clear preference is for the use of re-usable cloth disposable cloths appear to be of a higher microbial standard. It is thought that methods of disinfection of re-usable cloth in some cases may not be sufficient to remove all bacteria and may contribute to the high number of unsatisfactory results found in this survey.

On review of the results with Local Authority officers it is apparent that increased knowledge of disinfection and a promotion of the use of disposable cloths that the microbiological quality of cloths used in restaurants and take-away catering outlets may improve but currently these cloths continue to be reservoirs of bacteria for contamination and a risk of cross contamination.

## ACKNOWLEDGEMENTS

This was a joint study between the HPA FW&E Microbiology Network (Leeds Laboratory), the North East Food Liaison Microbiological Sampling Group and the Tees Valley Food Liaison Microbiological Sampling Group.



# Current comparative study in North East England for commercial premises



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# Findings – lab results

- Domestic
  - 96% cloths found with Coliforms
  - 6% cloths found with Listeria
  - 6% cloths found with Staphylococcus aureus



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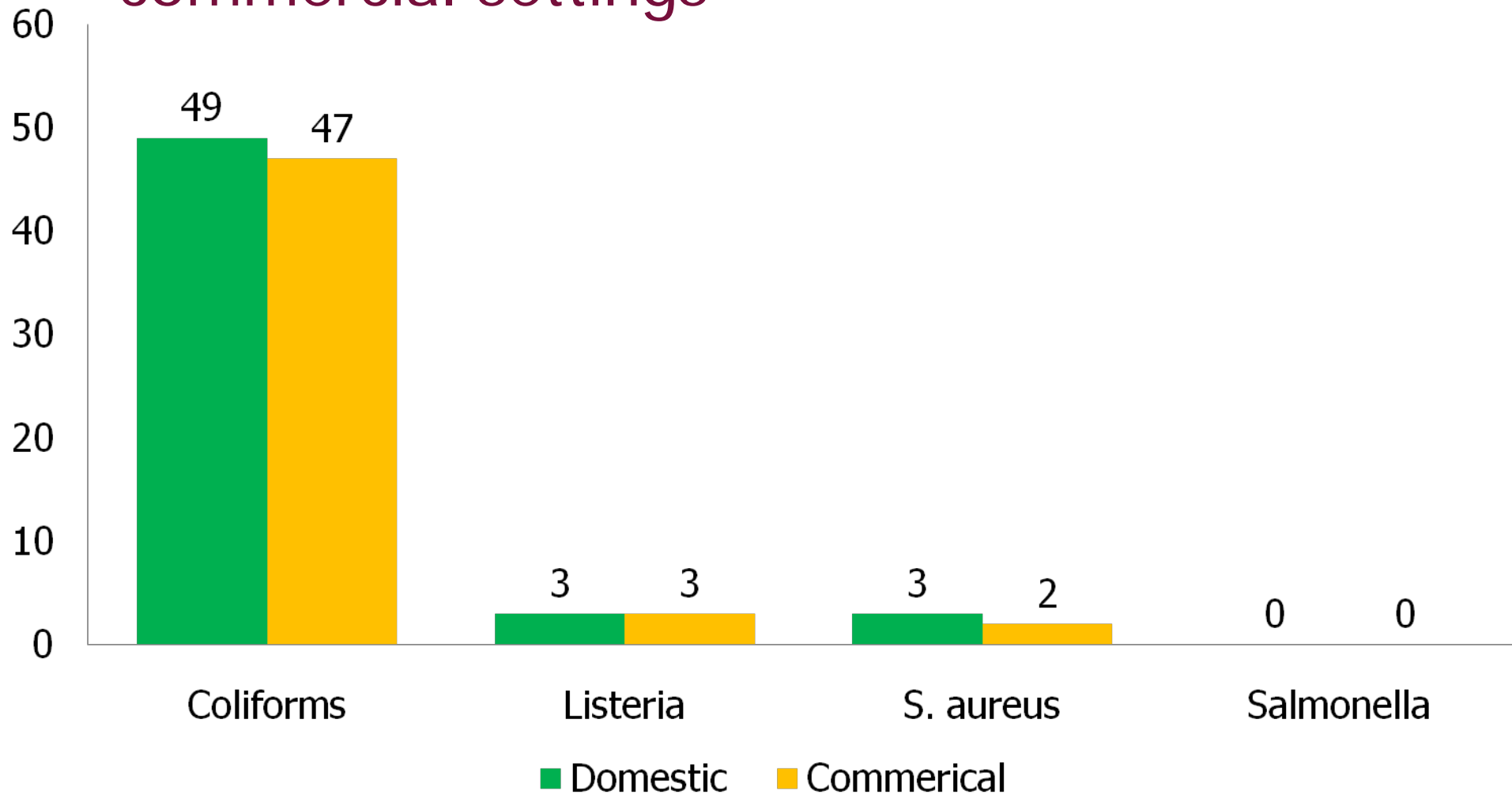
# Findings – lab results

- Commercial
  - 92% cloths found with Coliforms
  - 6% cloths found with Listeria
  - 4% cloths found with Staphylococcus aureus



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# Microorganisms detected in cloths sampled in domestic and commercial settings





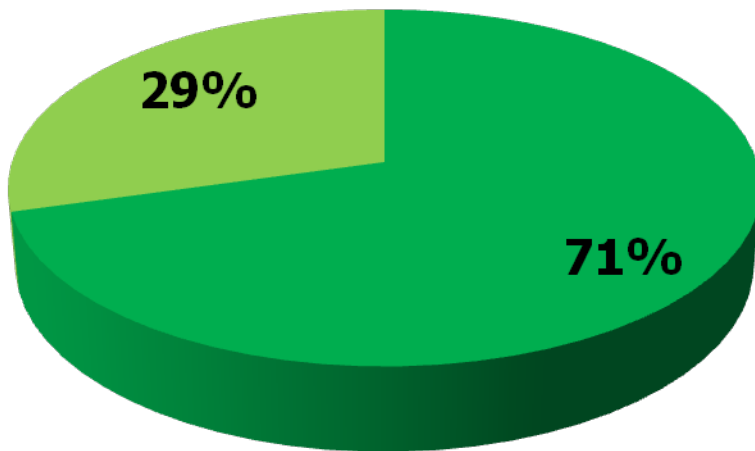
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# Type of cleaning cloth used

## Domestic

(51 cloths sampled)

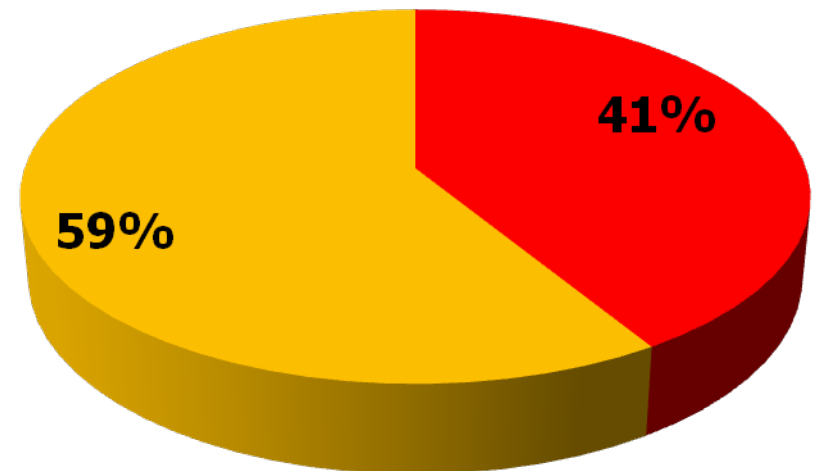
■ Reusable ■ Disposable



## Commercial

(51 cloths sampled)

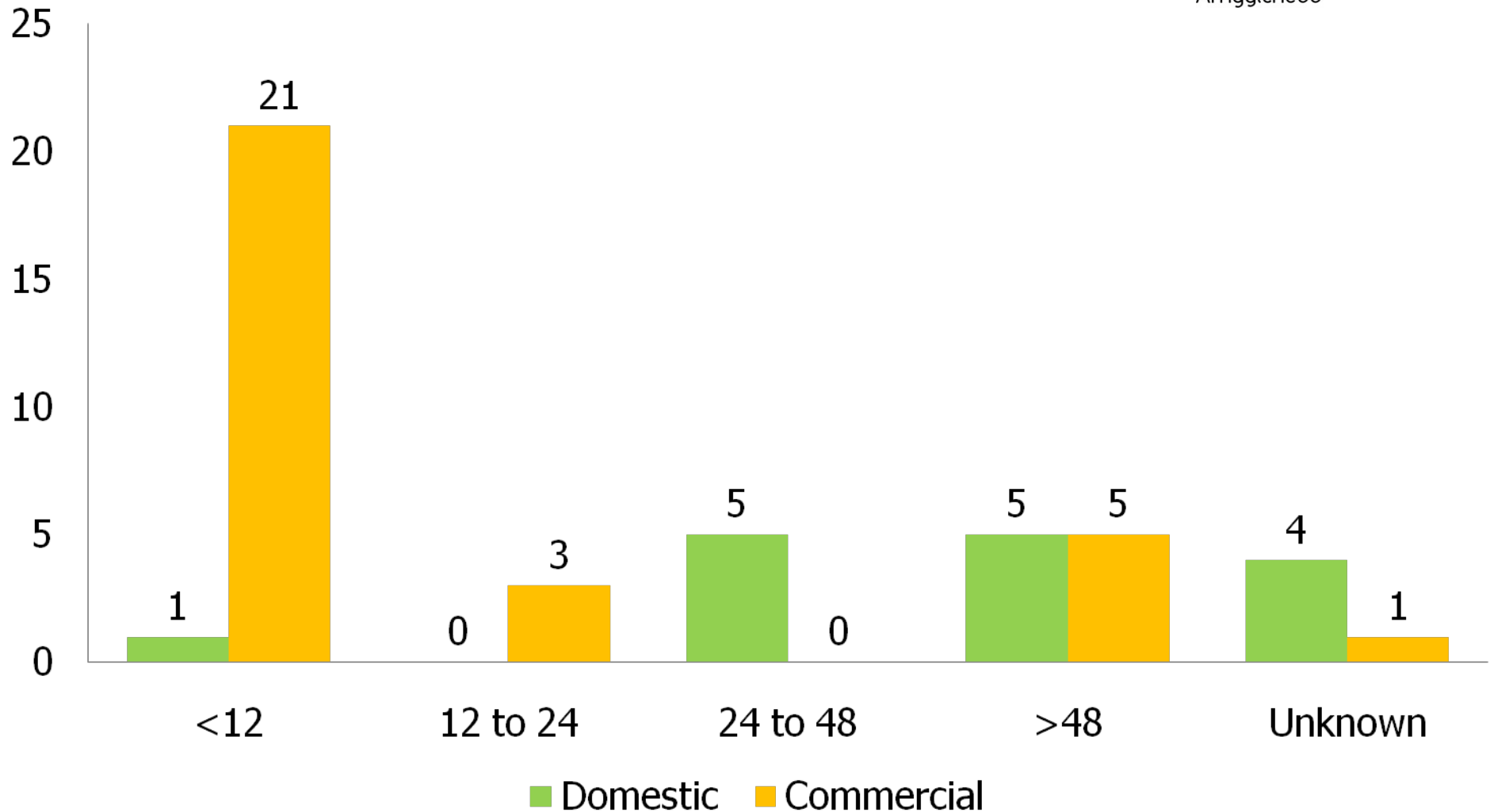
■ Reusable ■ Disposable



# How often are disposable cloths replaced?



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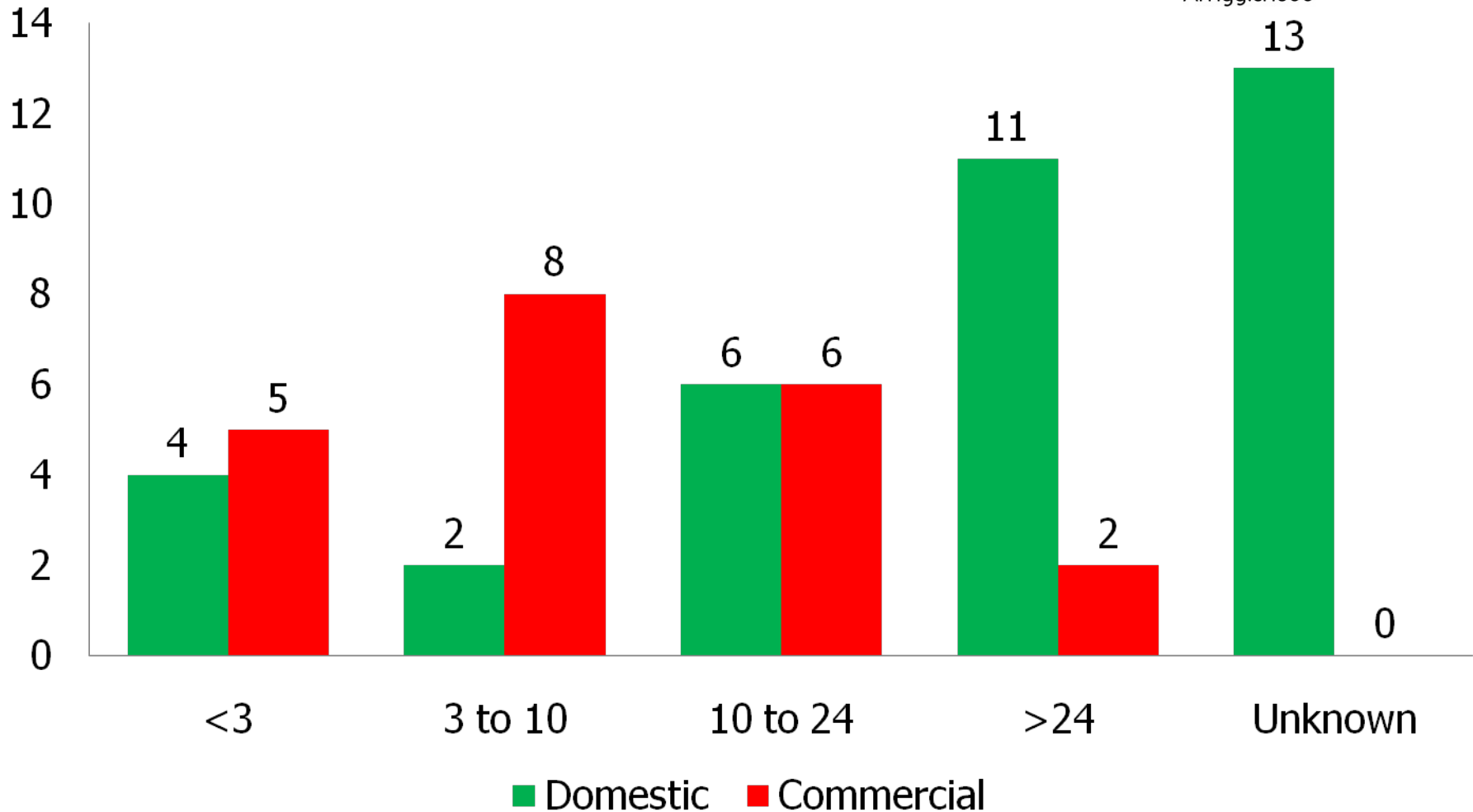


# How often are reusable cloths disinfected?



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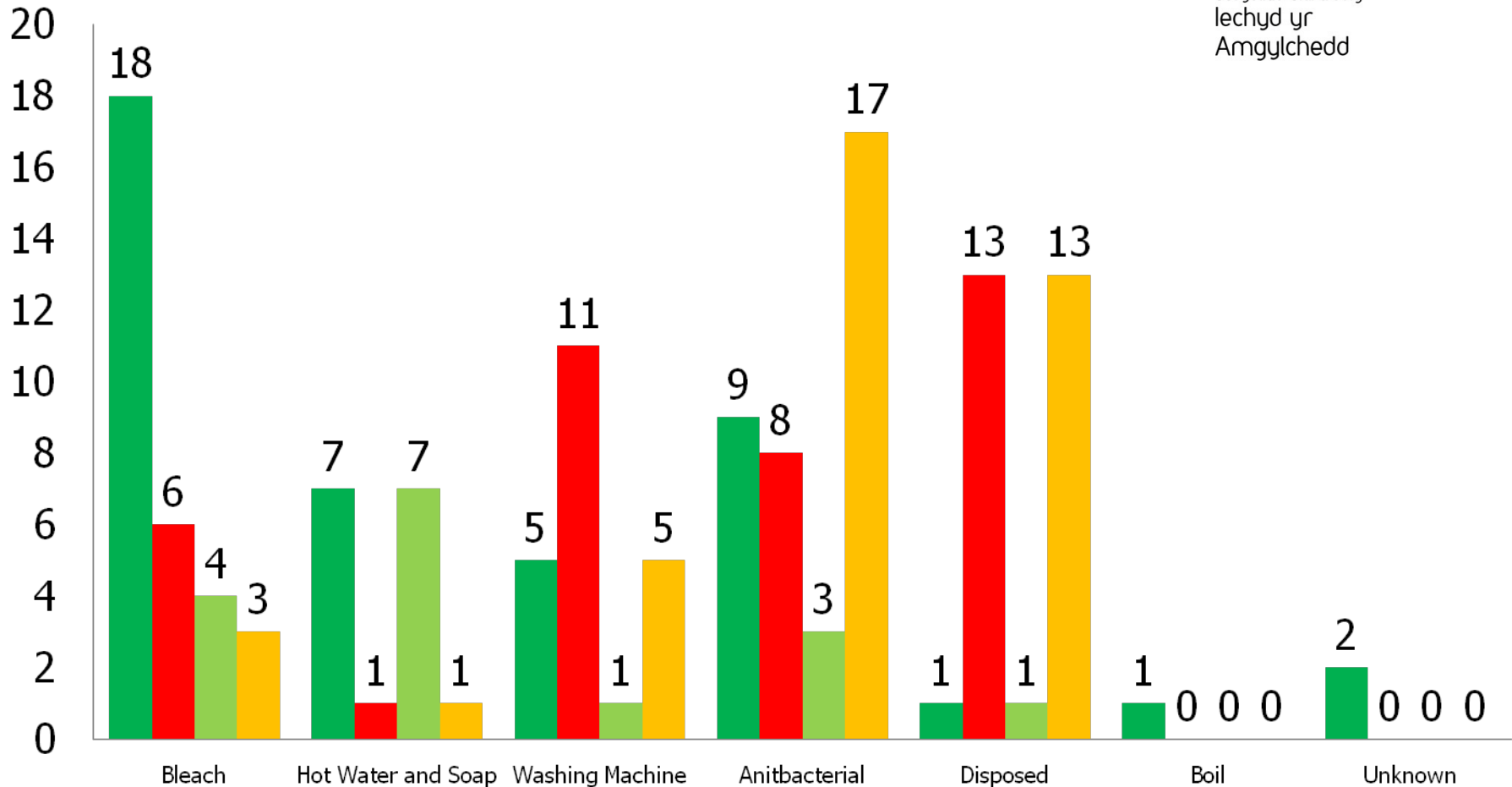
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# How are cloths cleaned?



■ Domestic Reusable

■ Commercial Reusable

■ Domestic Disposable

■ Commercial Disposable

# Aerobic Colony Count – 10<sup>8</sup> cfu/cloth or greater



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- 64% of domestic cloths
  - 82% reusable
  - 18% disposable
- 43% of commercial cloths
  - 50% reusable
  - 50% disposable

# Aerobic Colony Count - $10^5$ cfu/cloth or below



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- 14% of domestic cloths
  - 57% reusable
  - 43% disposable
- 41% of commercial cloths
  - 29% reusable
  - 71% disposable



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# Conclusions

- Cloths continue to be reservoirs of bacteria
- Both areas require improvement
- Domestic use poses greater risk of cross-contamination

# Where does the greater risk really lie?



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- Do we need to do more to educate the public?
  - Can we alleviate the public health risk?
- Can we do more to inform commercial premises of safe hygiene practices?