

This item was submitted to [Loughborough's Research Repository](#) by the author.  
Items in Figshare are protected by copyright, with all rights reserved, unless otherwise indicated.

## **A new approach to measure the impact of sanitation programmes**

PLEASE CITE THE PUBLISHED VERSION

PUBLISHER

© WEDC, Loughborough University

VERSION

VoR (Version of Record)

PUBLISHER STATEMENT

This work is made available according to the conditions of the Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International (CC BY-NC-ND 4.0) licence. Full details of this licence are available at: <https://creativecommons.org/licenses/by-nc-nd/4.0/>

LICENCE

CC BY-NC-ND 4.0

REPOSITORY RECORD

Holden, Richard, and Nompumelelo Phakathi. 2019. "A New Approach to Measure the Impact of Sanitation Programmes". figshare. <https://hdl.handle.net/2134/28979>.



## A new approach to measure the impact of sanitation programmes

*Richard Holden and Nompumelelo Phakathi, South Africa*

THE SOUTH AFRICAN sanitation programme is, as in most other countries, primarily an intervention to improve health. It is difficult, however, to measure health impact, at community level over the short-term, as there are no reliable statistics on diseases obtainable from local health centres (if they exist). Also, not everyone consults a clinic or hospital when they are sick. Many people consult traditional healers, who live in the community, as they are more accessible than the public health service. These healers do not keep records of who visited them and for what purposes. At project level, therefore, there are no statistics available to measure the health impact of a sanitation programme. Where statistics are available the area covered is too large and there are so many other factors, such as the impact of AIDS that it is not possible to determine if any changes were due to a sanitation project.

Due to the above reasons most sanitation programmes end up focusing on the building of toilets as this is where subsidies are targeted and because it is an easily measurable indicator.

Although it is not easy to measure the health impact of a sanitation programme it is possible to make an assessment, at household and thus community level, of the risk of disease being transmitted by measuring the number of barriers to the transmission of disease. The principle applied is the same as in the water treatment industry, where water passes through multiple treatments before being supplied to consumers. If disease should pass through one treatment, or that treatment should fail, the other treatments will ensure that the water is still safe.

In the same way if a household has a number of barriers to the transmission of disease in place, if disease passes the 1<sup>st</sup> barrier, other barriers will still reduce the likelihood of transmission.

### Development of health and hygiene survey

A simple survey has been developed, which provides the means to score each household in a community on the number of barriers to the transmission of disease. Each barrier scores 1, so the higher the score the more barriers are in place and the lower the risk of the transmission of diseases.

The questions are based on observation with a simple Yes or No answer (except for refuse disposal where there is some subjectivity). This reduces subjectivity considerably and makes it easy to train community members to administer the survey. Examples of the questions are as follows.

1. Is the toilet clean?	Yes=1 No =0
2. The toilet smells pleasant / no smell.	Yes=1 No =0
3. Is there evidence of toilet paper (toilet roll, cut up newspaper etc) being used?*	Yes=1 No =0
4. Is the property clear of rubbish?	Very well kept=1 Fairly clean=0.7 Dirty =0.3 Very dirty=0

\* In a Muslim community this could be changed to evidence of water for anal cleansing.

The survey has 16 possible barriers to the spread of diseases, which each household is marked against. The survey is administered:

- At the beginning of the project (baseline survey) to find out what barriers are in place and provide information for the planning of the project;
- During implementation to monitor progress and take any corrective action; and
- At the end to assess the project's impact.

Although, to date, the survey has only been carried out during a sanitation project it could easily be implemented at fixed intervals to determine if there had been any changes within the community.

Key issues addressed by the survey are:

- The type of toilet provided, whether it is constructed, used and maintained correctly;
- Whether any anal cleansing material (paper, water etc.) is available;
- What water supply is available. The distance water has to be carried is a critical factor in determining the quantity of water a household uses. All the studies carried out in South Africa show that households use between 2-4m<sup>3</sup> per month from communal sources. This figure increases with yard connections and is even higher with house connections. Therefore a household with water inside the house would score 4, whereas one with a communal source at a distance greater than 200m would only score 1.
- Whether potable water is stored safely;

- Whether there are hand washing available and in use; and
- Whether the yard and the surrounding areas are kept free from refuse

This information collected can be modified to suit any situation. For example in urban areas the municipality might be responsible for the collection of solid waste. There might be a question on whether the service is delivered, whilst in rural areas there may be no refuse collection and such a question would not be asked.

The results from the baseline survey are used during participatory planning workshops with the community, when they participate in interpreting the results. This is important as frequently outsiders make the wrong conclusions. An example of this is handwashing where the WASH campaign in South Africa has exhorted people to wash their hands as if it were a behavioural problem. Most of the surveys, however, showed a strong correlation between lack of handwashing facilities and distance that water is carried. After much discussions with the communities the following emerged:

- Distance from the water supply limits household consumption to between 2-4m<sup>3</sup> per month, due to the physical effort of carrying the water;
- The following handwashing facilities had been proposed but were rejected for the by the community for the following reasons;
  - a) A bowl with water in it next to the toilet. It was pointed out that after the 1<sup>st</sup> person had washed their hands it would be dirty and no-one else could use it;
  - b) A tippy tap bottle. This is very difficult to use without the bottle getting dirty; and
  - c) A bottle with some sort of plug in it. Old people and children have difficulty in putting the plug back in and in the meantime the water runs out. If someone has to continually fill such a facility it increases the burden of fetching water. Due to the physical effort most people are reluctant to do this.

After receiving this feedback from the community much effort was put into finding an appropriate solution that combined an easy closing tap with conservation of water. Fortunately in South Africa there was access to a very cheap tap produced for the wine and fruit juice industry, which had the right characteristics. This tap is then inserted in a 5-litre plastic bucket or old paint tin. This is now been used widely in the sanitation programmes.

The survey allows distinction to be made between problems at household level and general community wide problems. An example of this was at Opuzane, KwaZulu-Natal. During a survey all the households were scoring between 8 & 12. Eight being considered acceptable where there is no on site water. However, one house scored only 4. Since this was a solitary result that household would

require an individual intervention compared to the broad campaign in the rest of the community.

### Implementation of the survey

Apart from the fact that the survey provides a means to plan and then assess the impact of a sanitation intervention, it offers a number of other significant advantages:

- 1) Due to its simplicity it can be undertaken by people drawn from the community, rather than with outside facilitators as with more complicated surveys such as Knowledge, Attitude and Perception Surveys;
- 2) It can be easily translated into local languages. Currently it has been used in 4 of the 11 official languages in South Africa;
- 3) It is quick to train community members, training taking less than a day;
- 4) Every house in the community is surveyed. It, therefore, immediately makes the entire community aware of the project and is not subject to statistical error from sampling. The number of people used depends on the size, the density of households in the area to be surveyed, and the time allocated for the survey. The number of people who conduct the survey is not important as people are paid per form completed;
- 5) The survey is also educational as it is done with the householder present. If a question is answered "no", and it is something the household can implement without an outside intervention, then an explanation can be given to the household on the spot; and
- 6) It is cheap and quick to administer. In Johannesburg 3,924 households were surveyed in one week, the survey captured by community members and the intervention planned for a total cost of R44,516 (£3,560) or R11.34 (£0.90) per household. In uThukela 18,000 households were surveyed in 4 weeks. Although there is the temptation to cheat, when payment is output based, it is easily detected through random sampling and identical scoring from the same person.
- 7) It immediately provides community ownership of the project as they see themselves running the project from its inception.

### Results of baseline survey: mountain view, Johannesburg

Mountain View is an informal settlement in the peri-urban area of Johannesburg. Before the sanitation project commenced the area was served with communal chemical toilets, communal water tanks supplied by road tankers and communal rubbish containers for solid waste. The objective of the project was to build every household its own VIP with a handwashing facility, conditional on them digging the pit, and to promote health and hygiene. The results of the baseline survey are summarised in Tables 1 & 2.

Table 1 showed that 55% of the households scored 7 or less, making a compelling case for an intervention. How-

**Table 1. Barriers to the transmission of disease**

No. of barriers	No. of Households	Percentage of Households
0	7	0.4%
1	13	0.8%
2	31	1.9%
3	76	4.7%
4	111	6.9%
5	154	9.6%
6	219	13.7%
7	267	16.6%
8	204	12.7%
9	177	11.0%
10	136	8.5%
11	85	5.3%
12	73	4.6%
13	45	2.8%
14	4	0.2%
15	1	0.1%
16	1	0.1%

ever, when the results of the survey in Table 2 were discussed with the community it was apparent that the greatest need was for infrastructure and institutional change, rather than behavioural change by households.

The survey showed that although the municipality had provided communal chemical toilets, 38% of the households had invested time and money building their own pit toilet. Also, only in 63% of the households did all the members use a toilet.

The reason for this, stated during the participatory workshops, was simply that the communal toilets were often highly unpleasant to use and unsafe at nights. The community saw household VIP toilets as a significant improvement and demonstrated this by digging 3100 pits in 4 months.

With handwashing only 11% of the households had a specific facility, yet 77% of the households took proper care of their drinking water, demonstrating that value was placed on clean water. This appears contradictory until it was realised that the road tanker supply was extremely erratic, the community sometimes going days without tankers arriving. Also, nearly the entire community had to carry the water to their homes, 61% a distance of more than 200m.

The community, therefore, was conserving and preserving their water as much as possible and in this situation promoting handwashing without increasing the water supply would not be productive. The municipality, therefore, agreed to construct a piped water supply thus dramatically improving the reliability and the quantity available.

The final issue was refuse removal. Even though 48% of the households kept their yard free from rubbish this effort was negated by the municipality, which failed to empty the communal rubbish containers once a week as required. Months often passed before this happened, resulting in the surrounding area becoming strewn with litter. The solution to this fell outside the community and rested with the municipality.

With a high demand for VIP toilets, the municipality agreeing to improve the water supply and negotiations entered into for an improved refuse removal service, the

**Table 2. Results of survey**

Description of Barrier	No. of Households Practicing	%
<b>Toilet</b>		
Is the toilet a VIP?	-	0%
If yes, does the vent pipe have a fly screen on with no visible holes in a mesh?	-	0%
Is a toilet a traditional pit latrine?	609	38%
Is it a communal chemical toilet?	995	62%
Is a toilet structure in a good condition, comfortable & gives privacy to users?*	418	26%
Can faeces drop cleanly through the seat without fouling the sides?*	590	37%
Is the toilet clean?*	585	36%
Do all inhabitants/occupants use the toilet?	1,015	63%
Is there evidence that a toilet paper/newspaper is being used?	1,011	63%
<b>Hand Washing</b>		
Is there a hand washing facility with water in it?	170	11%
Is there soap or ash available and is it being used?	349	22%
<b>Water Supply</b>		
Is there piped water in the house/building?	20	1%
Is there a piped yard connection?	10	1%
Is there a rain water tank or hand pump on site?	63	4%
Is there a communal water tank or tap at a distance less than 200m?	534	33%
Is there a communal water tank or tap at a distance more than 200m?	974	61%
Is the drinking water from a safe source or treated by bleaching or boiling?	712	44%
Is the water stored in a clean container with a lid on?	1,235	77%
<b>Refuse Disposal</b>		
Is the property clear of rubbish?	770	48%
Is the surrounding environment clear of rubbish?	12	1%
Does the refuse truck come every week?	-	0%

\* only asked on household toilets

community decided to focus the health and hygiene promotion on hand washing, the operation and maintenance of the toilet and keeping the environment clean.

As of July 2003 the project was not complete, but surveys of the households who have already received the new toilets indicate that most are scoring between 10 and 12 and thus have significantly increased the number of barriers to the transmission of disease.

### **Conclusion**

By surveying a proxy indicator, barriers to the transmission of disease, it allowed the sanitation projects in Johannesburg and Uthukela to gather reliable data quickly and cheaply. The community could then use this data in the planning of the sanitation intervention and on completion of the project an assessment could be made of how successful the intervention had been.

---

RICHARD HOLDEN, The Mvula Trust, South Africa.  
NOMPUMELELO PHAKATHI, The Mvula Trust, South Africa.

---