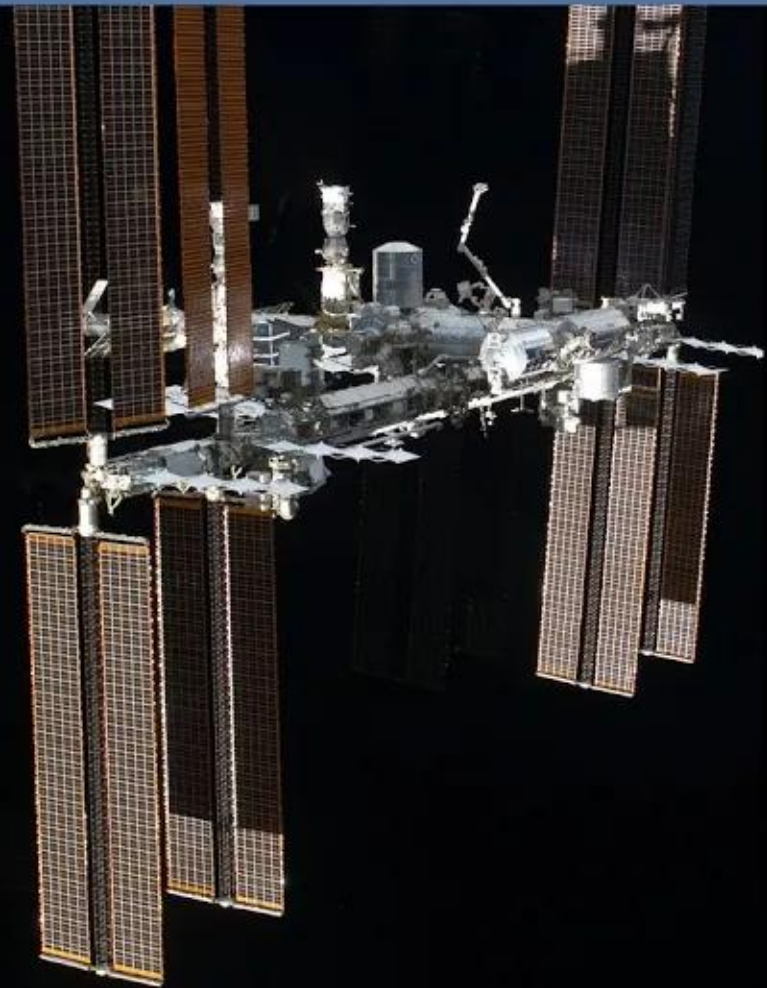


BENEFITS FOR HUMANITY KNOW YOUR WATER



1
00:00:00,006 --> 00:00:01,336
[Music]

2
00:00:01,336 --> 00:00:16,486
>> Most of the children,
they come here

3
00:00:16,556 --> 00:00:19,776
with waterborne diseases.

4
00:00:20,226 --> 00:00:22,876
>> So many children under
five suffer from diarrhea.

5
00:00:23,006 --> 00:00:24,766
>> They're complaining

6
00:00:24,866 --> 00:00:27,806
about their abdominal
pain, their skin rashes.

7
00:00:28,406 --> 00:00:39,796
>> They get waterborne
illness through drinking water.

8
00:00:39,796 --> 00:00:40,056
[Music]

9
00:00:40,056 --> 00:00:43,696
>> Most of the community members
had little knowledge regarding

10
00:00:43,696 --> 00:00:46,656
the use of safe water
and what safe water is.

11
00:00:46,936 --> 00:00:49,446
>> Because most of the water,
we use it without knowing

12

00:00:49,446 --> 00:00:51,566
if it is infected
with disease or not.

13

00:00:52,116 --> 00:00:55,276
>> So we needed to test it
and so that we make sure

14

00:00:55,276 --> 00:00:58,306
that the water is
safe or not safe.

15

00:00:58,806 --> 00:01:02,456
[Music]

16

00:01:02,956 --> 00:01:05,526
>> A lot of people have the idea
that water quality is too hard

17

00:01:05,526 --> 00:01:07,566
to do in the field and
it's too complicated.

18

00:01:08,056 --> 00:01:09,736
>> Having to transport samples,

19

00:01:09,736 --> 00:01:11,476
having to have reliable
electricity,

20

00:01:11,476 --> 00:01:14,906
having to heat samples or keep
samples at certain temperatures

21

00:01:14,906 --> 00:01:16,066
or put them in refrigerators.

22

00:01:16,266 --> 00:01:21,476

>> But probably the biggest challenge is actually the cost.

23

00:01:21,796 --> 00:01:24,646

>> The price was really high, up to \$300 a test.

24

00:01:24,826 --> 00:01:26,006

>> So all those things come together

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00:01:26,006 --> 00:01:27,206

to make it really difficult

26

00:01:27,206 --> 00:01:29,356

to use a traditional laboratory approach

27

00:01:29,786 --> 00:01:30,656

when you're testing water.

28

00:01:30,876 --> 00:01:33,836

What's been missing is the really simple, cheap test kit,

29

00:01:33,936 --> 00:01:38,606

and that solution came from above.

30

00:01:38,606 --> 00:01:38,673

[Music]

31

00:01:38,673 --> 00:01:42,086

On the Space Station, we recycle almost all of the water

32

00:01:42,086 --> 00:01:45,116

that the astronauts drink, and that constitutes a risk

33

00:01:45,116 --> 00:01:47,416

because if that water
became contaminated,

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00:01:47,416 --> 00:01:49,546

the astronauts would have
to abandon the Space Station

35

00:01:49,546 --> 00:01:51,146

in the worst case scenario.

36

00:01:51,146 --> 00:01:53,436

What we needed on the
Space Station was something

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00:01:53,436 --> 00:01:55,636

that was small, easy
to transport,

38

00:01:55,636 --> 00:01:58,186

and didn't require a lot of
training for the astronauts.

39

00:01:58,186 --> 00:02:01,046

We developed a water test kit
that was really easy to use

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00:02:01,216 --> 00:02:04,216

and used off the shelf
components, and we called

41

00:02:04,216 --> 00:02:07,546

that the Microbial Water
Analysis Kit, or MWAK.

42

00:02:07,546 --> 00:02:09,936

It's basically a bag
that changes color in it,

43

00:02:10,156 --> 00:02:12,856
and the astronauts just had to
hook it up to the water system,

44

00:02:12,946 --> 00:02:15,006
take the sample,
store it overnight,

45

00:02:15,196 --> 00:02:16,496
and read it the next day.

46

00:02:17,486 --> 00:02:19,606
It worked great, and
it's still in use today.

47

00:02:19,806 --> 00:02:22,366
This was when we realized we had
a chance to make a difference

48

00:02:22,366 --> 00:02:25,366
in the world using the same
technology that was used by NASA

49

00:02:25,746 --> 00:02:31,026
but applied in a remote area
of a developing country.

50

00:02:31,026 --> 00:02:31,326
[Music]

51

00:02:31,326 --> 00:02:33,836
>> We started mWater for
the biggest health crisis

52

00:02:33,836 --> 00:02:36,016
on the planet, which is
a lack of safe water.

53

00:02:36,376 --> 00:02:38,666
The test kit is revolutionary

because of its cost.

54

00:02:39,316 --> 00:02:42,276

It lowers the cost of testing
water points from hundreds

55

00:02:42,276 --> 00:02:44,236

of dollars to about
five to seven dollars.

56

00:02:44,786 --> 00:02:47,046

It can be done on site
in the remote region,

57

00:02:47,046 --> 00:02:49,206

and it can give you a
result within 24 hours.

58

00:02:49,416 --> 00:02:50,786

>> I take a sample today.

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00:02:50,786 --> 00:02:52,696

Tomorrow I have results.

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00:02:52,696 --> 00:02:55,156

To use a mWater kit
is very easy.

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00:02:55,156 --> 00:02:58,506

>> But we learned that testing
water by itself wasn't enough.

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00:02:58,506 --> 00:02:59,466

With the mobile app,

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00:02:59,466 --> 00:03:01,976

people could map water
sources and record the data.

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00:03:01,976 --> 00:03:04,436

>> So that way, we're building
sort of a global database

65

00:03:04,436 --> 00:03:07,386

of water information that
everybody can contribute to

66

00:03:07,386 --> 00:03:08,376

and share with others.

67

00:03:08,956 --> 00:03:10,836

>> So what that meant was people

68

00:03:10,836 --> 00:03:14,036

who before didn't have a
feasible and affordable way

69

00:03:14,146 --> 00:03:17,606

to test water suddenly
had the means to know

70

00:03:17,606 --> 00:03:19,176

which water sources
around them were safe.

71

00:03:19,636 --> 00:03:21,526

>> It's made people
much more aware

72

00:03:22,066 --> 00:03:23,566

of the issues of water quality.

73

00:03:23,856 --> 00:03:24,976

That's a very powerful thing.

74

00:03:25,466 --> 00:03:27,546

>> And that's all due to
technology that we've borrowed

75

00:03:27,546 --> 00:03:28,906
from the International
Space Station.

76

00:03:29,406 --> 00:03:32,516
[Music]

77

00:03:33,016 --> 00:03:36,406
So now we're able to assemble
a really low cost water quality

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00:03:36,406 --> 00:03:38,066
test kit to ship
all over the world.

79

00:03:38,346 --> 00:03:40,376
>> We've been working with
the local health ministry

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00:03:40,376 --> 00:03:43,806
and the water utility in
Mwanza, Tanzania since 2013.

81

00:03:43,806 --> 00:03:46,196
>> Through that technology,
most of the cities

82

00:03:46,196 --> 00:03:50,086
in Mwanza have an increased
awareness regarding the kind

83

00:03:50,086 --> 00:03:53,106
of water they use and whether
it causes them any waterborne

84

00:03:53,166 --> 00:03:54,836
illnesses or not.

85

00:03:55,016 --> 00:03:58,166

>> People are not treating
their water and avoiding sources

86

00:03:58,166 --> 00:04:00,006

of water which could
be contaminated.

87

00:04:00,416 --> 00:04:02,156

I've seen a growing awareness.

88

00:04:02,576 --> 00:04:04,816

>> It is very unusual for
technology that is used

89

00:04:04,816 --> 00:04:06,876

in International Space
Stations to be used

90

00:04:07,396 --> 00:04:11,936

in developing countries like
Tanzania, but it can be used

91

00:04:11,986 --> 00:04:18,206

and it should be used because
this technology is not limited