1
00:00:08,839 --> 00:00:06,740
over the past decade

2
00:00:11,990 --> 00:00:08,849
NASA's national space technology

3
00:00:14,539 --> 00:00:12,000
laboratories n STL in Bay st. Louis

4
00:00:19,400 --> 00:00:14,549
Mississippi has been doing related

5
00:00:25,640 --> 00:00:19,410
research when people begin living in

6
00:00:27,890 --> 00:00:25,650
space and Disney's Epcot Center in

7
00:00:30,589 --> 00:00:27,900
Florida have adopted research done in

8
00:00:33,049 --> 00:00:30,599
honesty oh by using a plant called the

9
00:00:36,680 --> 00:00:33,059
water hyacinth in their treatment of raw

10
00:00:40,040 --> 00:00:36,690
sewage this commonly the water hyacinth

11
00:00:42,410 --> 00:00:40,050
literally thrives on sewage the plant

12
00:00:45,650 --> 00:00:42,420
has a complex root mass which acts like

13
00:00:48,170 --> 00:00:45,660

a filter bacteria microorganisms that

14
00:00:50,900 --> 00:00:48,180
grow on the root systems break down and

15
00:00:52,540 --> 00:00:50,910
digest the sewage allowing the hyacinth

16
00:00:55,270 --> 00:00:52,550
to absorb nutrients

17
00:00:57,880 --> 00:00:55,280
toxic chemicals and even radioactive

18
00:01:00,010 --> 00:00:57,890
waste the effluent that comes out of

19
00:01:01,750 --> 00:01:00,020
this system which is treated sewage for

20
00:01:04,270 --> 00:01:01,760
a couple of days is of such high quality

21
00:01:07,840 --> 00:01:04,280
that would need only to go through a few

22
00:01:10,570 --> 00:01:07,850
final steps before it is drinkable the

23
00:01:12,820 --> 00:01:10,580
hyacinth dislikes cold water but when in

24
00:01:15,100 --> 00:01:12,830
a warm fire it grows at such a furious

25
00:01:16,050 --> 00:01:15,110
rate that it needs to be harvested on a

26
00:01:19,020 --> 00:01:16,060
regular

27
00:01:22,140 --> 00:01:19,030
once hardships

28
00:01:24,480 --> 00:01:22,150
for animals or shredded and loaded into

29
00:01:27,090 --> 00:01:24,490
a digester for further processing and

30
00:01:30,180 --> 00:01:27,100
the biogas which can be used as a fuel

31
00:01:32,400 --> 00:01:30,190
the city of San Diego's water Utilities

32
00:01:35,160 --> 00:01:32,410
Department has adopted the use of water

33
00:01:37,590 --> 00:01:35,170
hyacinth in a large-scale project to use

34
00:01:38,420 --> 00:01:37,600
plain raw sewage and process it into

35
00:01:41,010 --> 00:01:38,430
drinking water

36
00:01:43,140 --> 00:01:41,020
another plant related water filtration

37
00:01:46,230 --> 00:01:43,150
system recently developed through

38
00:01:49,859 --> 00:01:46,240

research at n SPL is called a rough reed

39
00:01:52,410 --> 00:01:49,869
filter in this case polluted Mississippi

40
00:01:55,710 --> 00:01:52,420
river water passes through granular rock

41
00:01:58,080 --> 00:01:55,720
containing reed plants the roots from

42
00:02:00,540 --> 00:01:58,090
the reeds and a high surface area of the

43
00:02:04,170 --> 00:02:00,550
rocks support bacteria that break down

44
00:02:06,660 --> 00:02:04,180
pollutants and purify water since weeds

45
00:02:08,729 --> 00:02:06,670
can tolerate cold weather this system

46
00:02:12,270 --> 00:02:08,739
works very well in regions where water

47
00:02:15,150 --> 00:02:12,280
hyacinths can't grow the latest research

48
00:02:18,360 --> 00:02:15,160
at n STL has been with a spider plant

49
00:02:20,910 --> 00:02:18,370
system that purifies air along the same

50
00:02:23,670 --> 00:02:20,920
lines as the rock reed filter does for

51
00:02:26,009 --> 00:02:23,680
water air is purified as it's drawn

52
00:02:28,199 --> 00:02:26,019
through the spider plant interacting

53
00:02:34,320 --> 00:02:28,209
with activated carbon and the plants

54
00:02:36,660 --> 00:02:34,330
root system of n STM now this is an

55
00:02:38,580 --> 00:02:36,670
exciting new technology that's emerging

56
00:02:42,780 --> 00:02:38,590
and we're looking at now it not only

57
00:02:44,910 --> 00:02:42,790
allow fewer plants inside a home to

58
00:02:47,160 --> 00:02:44,920
purify the air but it has tremendous

59
00:02:49,530 --> 00:02:47,170
applications for our future space

60
00:02:52,550 --> 00:02:49,540
station as we look towards developing a

61
00:02:56,039 --> 00:02:52,560
space station already moonbase others so

62
00:02:59,130 --> 00:02:56,049
these technology is evolving from

63
00:03:01,380 --> 00:02:59,140

aquatic plants to common house plants

64
00:03:04,289 --> 00:03:01,390
we're beginning to put this technology

65
00:03:06,990 --> 00:03:04,299
together for practical simplified

66
00:03:09,690 --> 00:03:07,000
everyday use with the ultimate

67
00:03:11,850 --> 00:03:09,700
long-range goal of perfecting a clothes

68
00:03:13,670 --> 00:03:11,860
ecological life-support system for a