# Water Nanotechnologies

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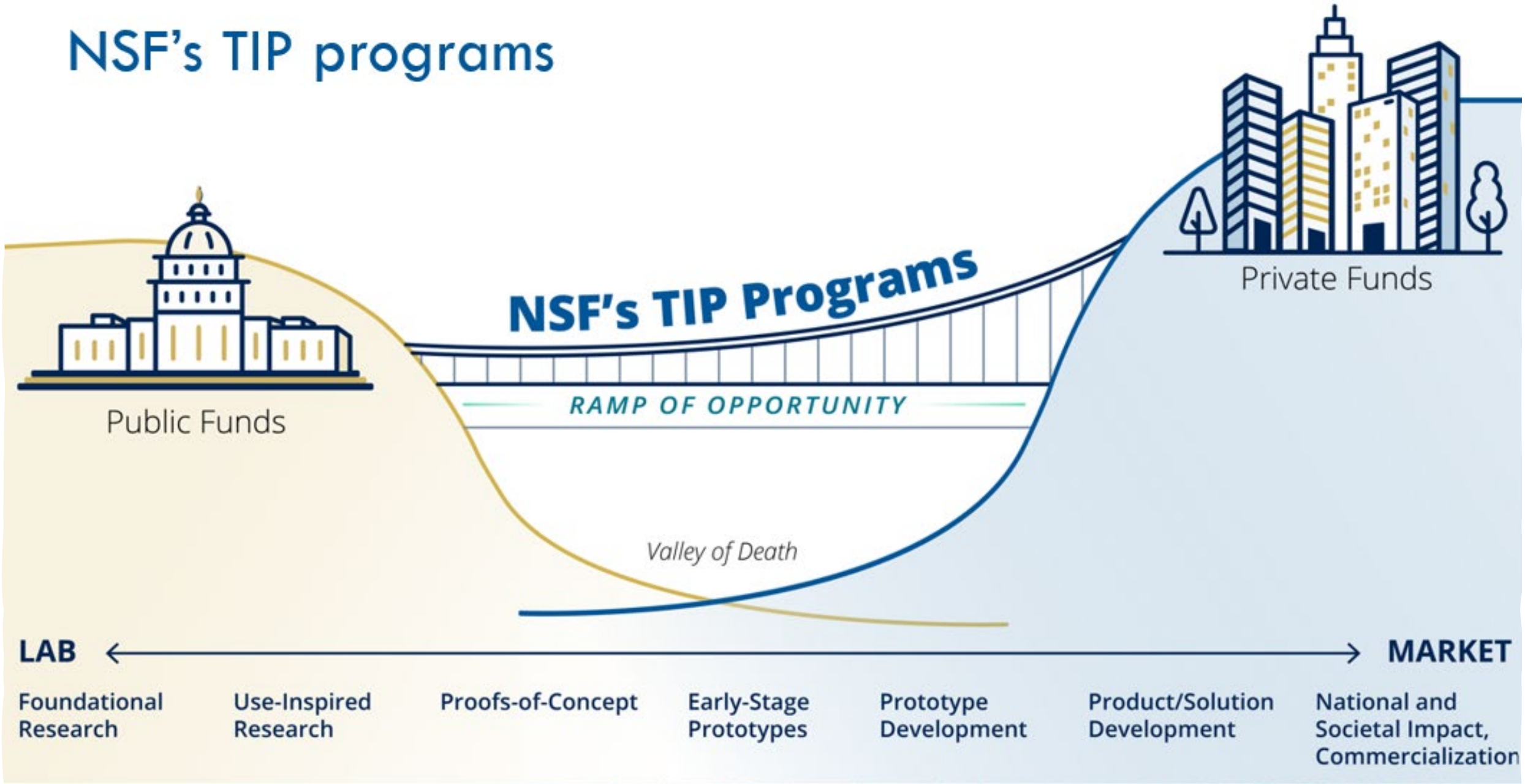
**https://seedfund.nsf.gov**

# TIP

## Directorate for Technology, Innovation and Partnerships

March 2022

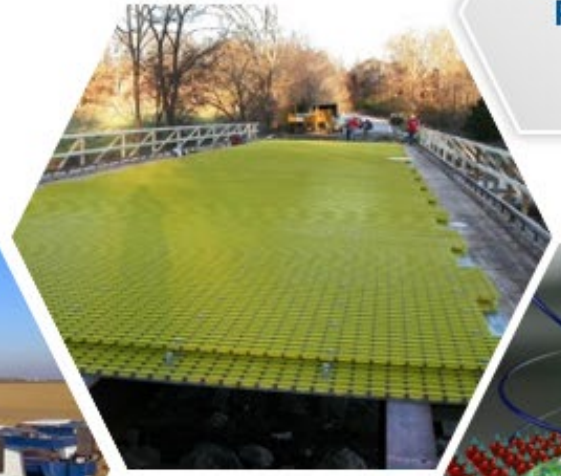
# NSF's TIP programs



# TIP Programs

America's Seed Fund (SBIR/STTR)

Future Programs



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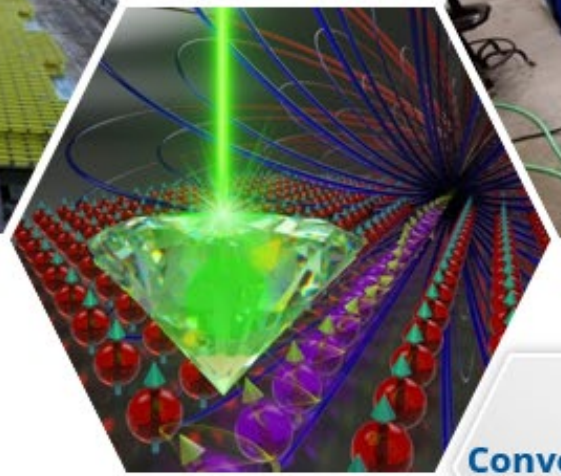


Convergence Accelerator

I-Corps

- Foster regional innovation ecosystems
- Create experiential learning opportunities
- Prepare students for the wide range of potential future jobs

TIP Technology, Innovation and Partnerships

America's SEED FUND
SBIR.STTR

https://seedfund.nsf.gov

WE INVEST UP TO $2 MILLION IN SEED FUNDING.

**AND TAKE ZERO EQUITY.**

Small Business Innovation Research (SBIR)
Small Business Technology Transfer (STTR)

**FY2019**
**NSF total = $212 M**

~400 small businesses/ year

Grant catalyzes Commercialization of high-risk technological innovations for Societal Impact

America's SEED FUND | NSF

# Process Overview

| 1 | 2 | 3 | | | | 4 |
|---|---|---|---|---|---|---|
| THE BASICS | SUBMIT A PROJECT PITCH (Required) | SUBMIT A FULL PROPOSAL (Required) | Review solicitations | Register your company | Submit your proposal | PROPOSAL REVIEW & DECISION |
| | Submit your Project Pitch anytime. Hear back in about 1 month. | If you are invited to submit a proposal, complete these steps. We offer multiple submission windows, but proposals can be submitted anytime. | | | | About 6 months after you submit, you'll be notified about funding. |

# Triple Helix of Merit Review Criteria

High Risk Technical Innovation

Commercial Potential

Broader Societal Impacts

**Phase I:**
Feasibility Research
6-12 Months
**$275,000**

**Funding for startups**

Up to **$275K** in R&D funding to demonstrate technical feasibility

Aimed at transforming **Scientific/ Engineering discovery** into products and services with **commercial and societal benefit**

**Project Pitch**
Get started any time at https://seedfund.nsf.gov/apply/get-started/

**Review Criteria for Full Proposals**
Intellectual Merit
Commercial Potential
Broader Impacts

Up to $1.75 M in R&D funding to **further develop funded technologies from Phase I**

Aimed at supporting and accelerating technical R&D for prototyping, pilot-scaling & getting manufacturing ready

Portfolio since 2014 shows (as of Sept 2019):

- **$7.2 billion** in follow-on institutional (equity) financing
- **97** successful exits (acquisitions, mergers, IPOs)

**Phase II:**
Prototype Development
24 Months
**$1,000,000**

**Phase IIB:**
Third-Party Investment
Plus 1:2 NSF Match
**(up to $500,000)**

**TECP:**
Up to $200,000

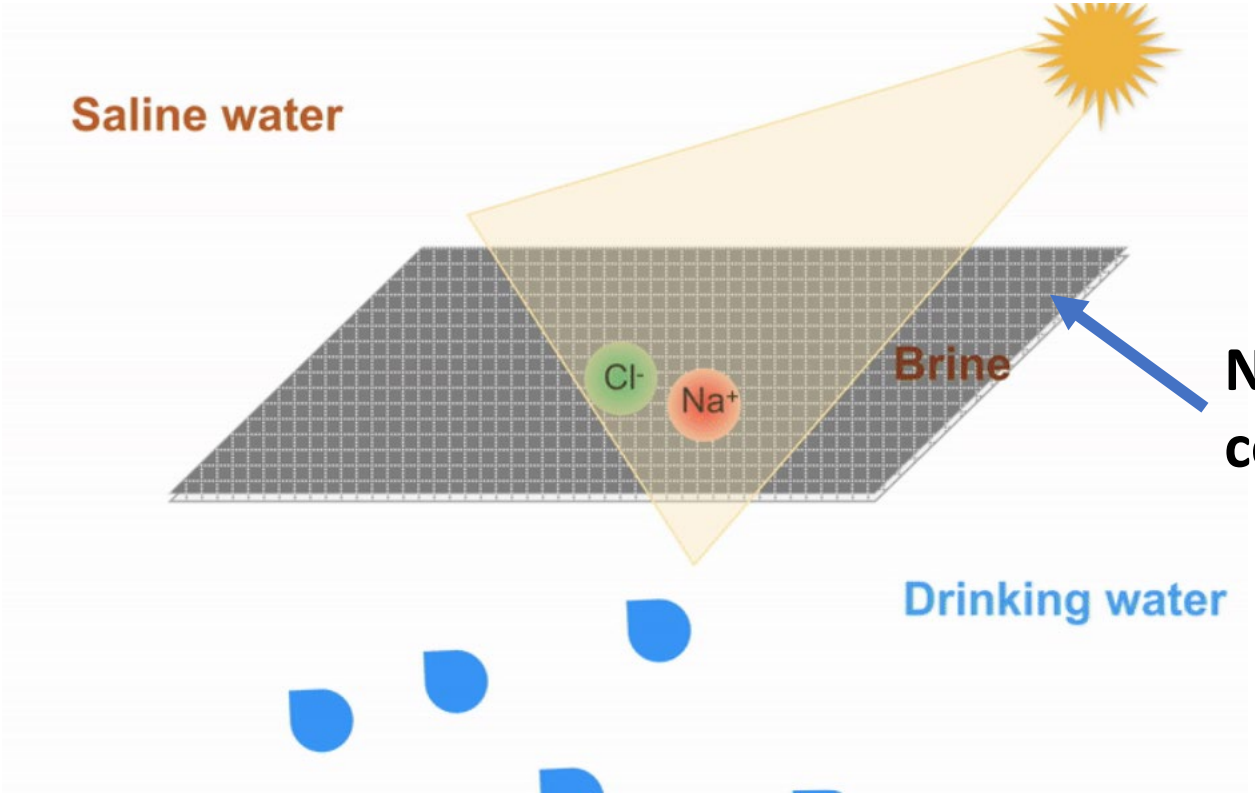
**TABA:**
$50,000

SolMem

# Solar Multi-Effect Membrane Distillation

2036470 – SBIR Phase I

Ambient conditions;
Completely powered by solar energy.




**Nanocomposite coating**

Agricultural wastewater, brackish water, RO concentrate, Seawater, and oil & gas produced water.



- 2.1 billion people drink fecally-contaminated water
- 50% of hospitalization in developing countries are due to waterborne diseases
- Contaminated drinking water causes >500,000 diarrheal deaths each year
- Low-income populations not only pay for water but pay anywhere from 30% to 10 times more in absolute terms than the wealthy.
- More than 80 per cent of wastewater resulting from human activities is discharged into rivers or sea without any pollution removal

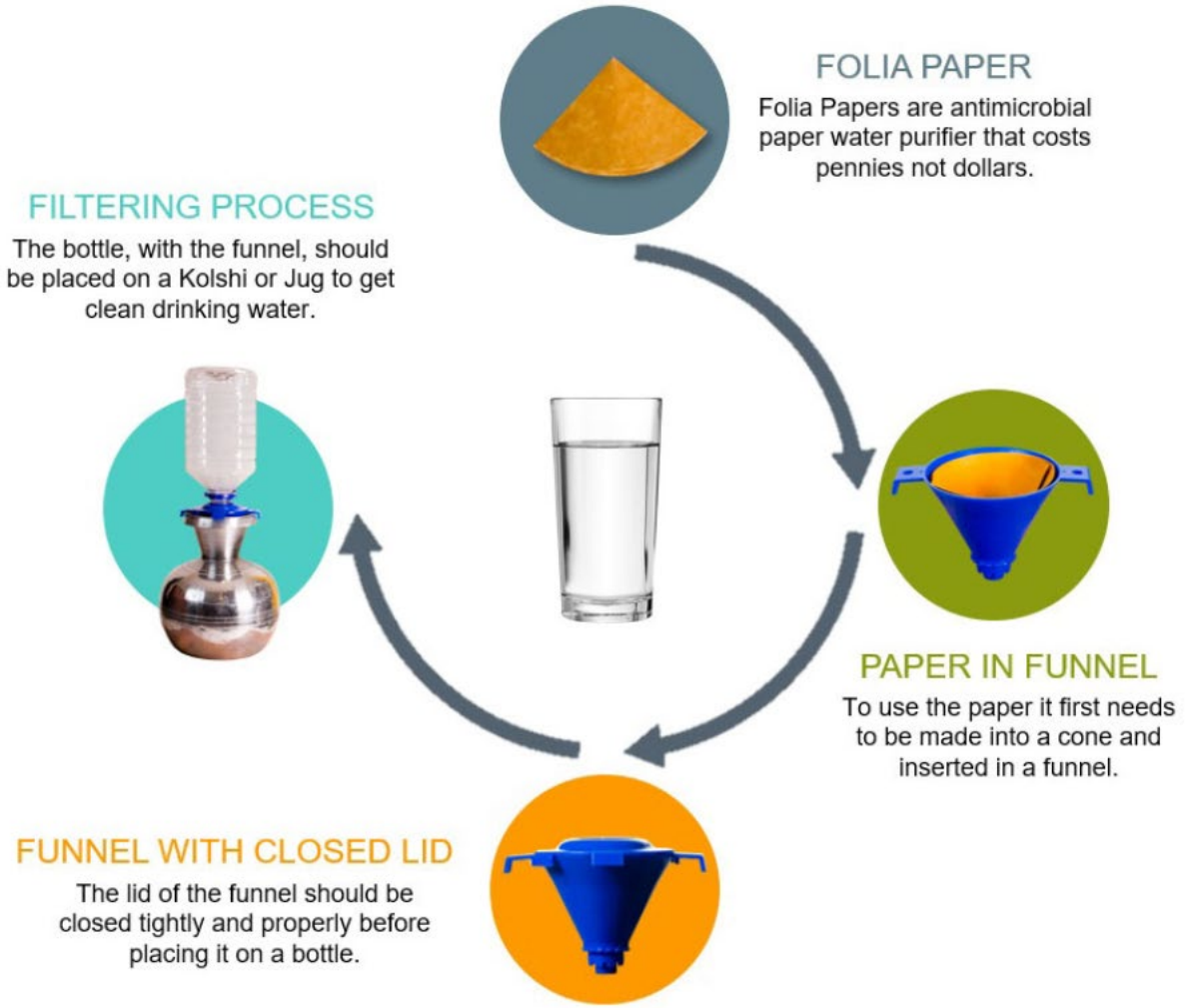
WHO and UNICEF (2017)

NSF SBIR Phase II 1951210

Green chemistry process |large-scale paper machinery to manufacture low-cost nano-metal functionalized materials | unlocking new mass-market consumer good business models.

The Folia Water Filter -antimicrobial paper water purifier packaged like a coffee filter that retails at 20 cents for 20 liters and is sold through mom and pop kiosk grocery stores.

50% of the population (80M) of Bangladesh - the target $2-10/day income level industrial working class; Global impact potential: 3B people



# Multi-Functional Nano Structures

2151578 – STTR Phase I

## Oleophilic Hydrophobic Magnetic (OHM) Sponge for Environmental Remediation

**OIL SPILL CLEANUP**

Perfect for both large and small scale oil cleanup and containment procedures.

**AGRICULTURAL RUNOFF**

Selectively absorb (and thus later recover) dissolved nutrients such as phosphates due to fertilizer runoffs.

**FACTORY MAINTENANCE**

Custom solutions for unique industrial cleanup and maintenance needs.

**SEWAGE TREATMENT**

Lower water filtration costs by reducing resources required to clean water.

# OHM Sponge™ and Pads

We provide Oil Absorbent pads/sponge in custom shapes and sizes. The pads can be further tailored for optimal absorption of light refined oils to heavy crude oil and bunker oil.

The additional advantage of our product is its re-usability and recovery of spilled oil. Re-use significantly reduces the disposal problem (our product can be re-used 10 to 30 times depending on the mechanical strength of pad/sponge material).

**HIGH CAPACITY**

## Absorbs oil upto 30 times its own weight.

**OHM SPONGE SORBENT PERFORMANCE TESTING**

**ASTM F726-17**

Absorbs heavy oils upto 30 times its own weight.

Absorbs light oils upto 10 times its own weight.

3 times higher oil absorption capacity compared to competitors.

https://seedfund.nsf.gov/awardees/history/details/?company=mfns-tech-inc

# NSF SBIR|STTR Summary Table

| | |
|---|---|
| Program name | America's Seed fund powered by NSF |
| URL | https://seedfund.nsf.gov |
| Contact information | SBIR@nsf.gov |
| Next deadline | Project Pitch submission any time<br>Proposals: October 26, 2022 |
| Mechanisms funded | SBIR/STTR grants |
| Amount awarded | Phase I $275K (6-12 months)<br>Phase II $1M ( 24 months) |