



# PER- AND POLYFLUOROALKYL SUBSTANCES (PFAS)

JULY 2021



# OUTLINE



## DEPARTMENT OF DEFENSE OVERVIEW

- Roles and Responsibilities
- Funding Process

## PFAS BACKGROUND: FROM 2016 TO 2021

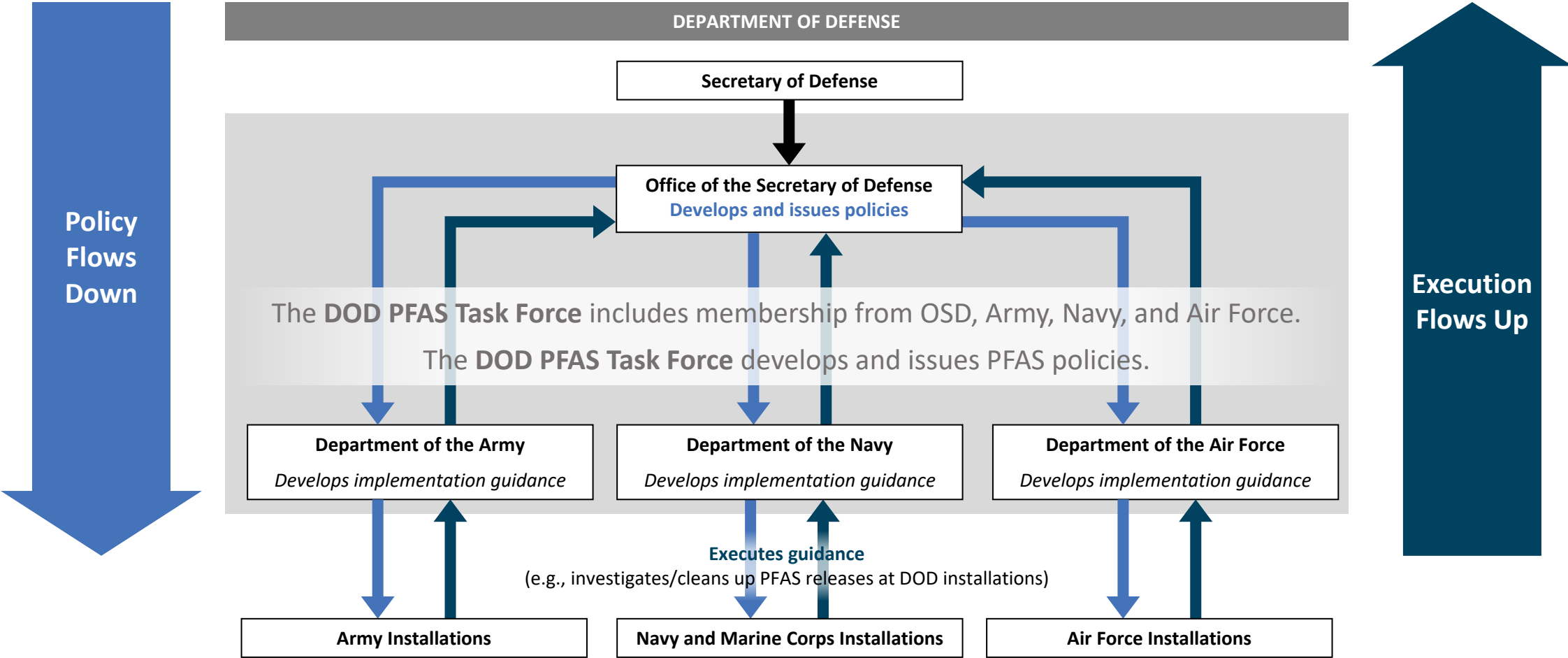
## PFAS TASK FORCE

- Mitigating and Eliminating the Use of the Current Aqueous Film-Forming Foam (AFFF)
- Fulfilling Our Cleanup Responsibilities Related to PFAS
- Understanding the Impact of PFAS on Human Health
- Expanding PFAS-Related Public Outreach



# DEPARTMENT OF DEFENSE OVERVIEW

## ROLES AND RESPONSIBILITIES





# DEPARTMENT OF DEFENSE OVERVIEW

## DOD FUNDING PROCESS



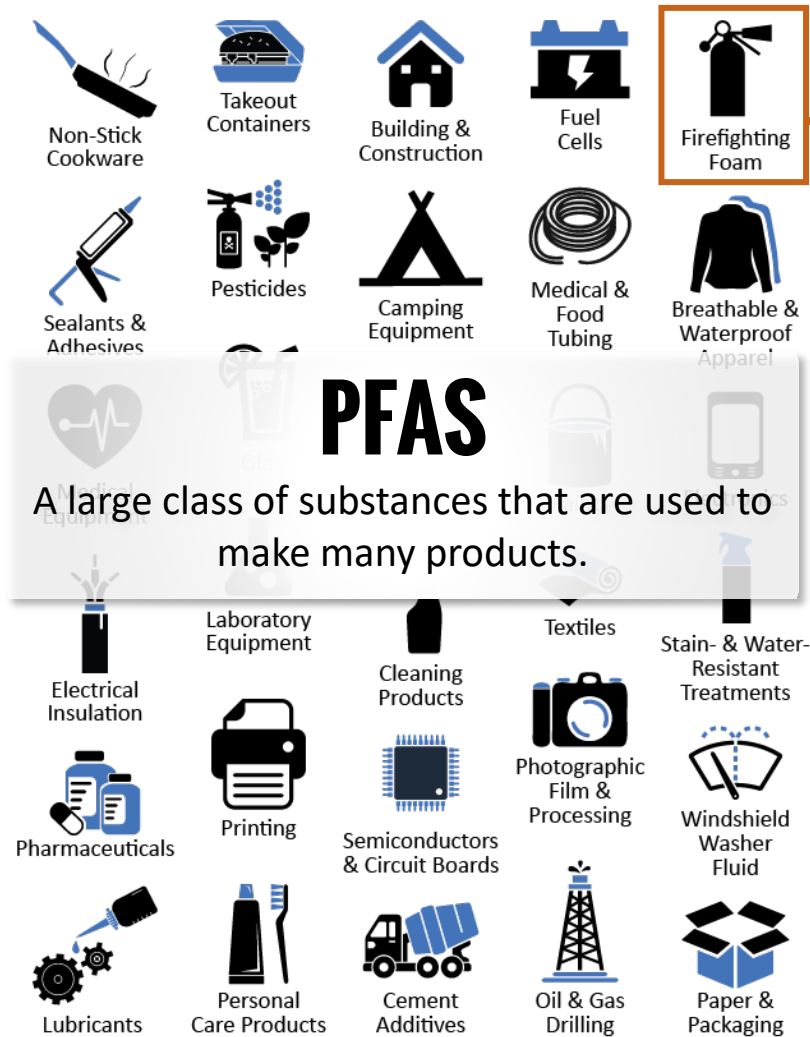
# PFAS BACKGROUND



## WHAT IS PFAS?

- PFAS is a large class of substances.
  - These substances are found in many industrial and consumer products because they increase a product's resistance to heat, stains, water, and grease.
- Non-Stick Cookware
  - Takeout Containers
  - Building & Construction
  - Fuel Cells
  - Firefighting Foam
  - Sealants & Adhesives
  - Pesticides
  - Camping Equipment
  - Medical & Food Tubing
  - Breathable & Waterproof Apparel
  - Medical Equipment
  - Glass
  - Plastics & Rubber
  - Paints
  - Electronics
  - Electrical Insulation
  - Laboratory Equipment
  - Cleaning Products
  - Textiles
  - Stain- & Water-Resistant Treatments
  - Pharmaceuticals
  - Printing
  - Semiconductors & Circuit Boards
  - Photographic Film & Processing
  - Windshield Washer Fluid
  - Lubricants
  - Personal Care Products
  - Cement Additives
  - Oil & Gas Drilling
  - Paper & Packaging

# PFAS BACKGROUND



## AFFF

DOD and others (local fire departments, the oil and gas industry, and commercial airports) use a certain kind of firefighting foam known as *aqueous film-forming foam*, or AFFF (“A triple F”) to rapidly extinguish petroleum-based fires and protect against catastrophic loss of life and property.





# PFAS BACKGROUND



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## PFOS & PFOA

The U.S. Environmental Protection Agency (EPA) has issued Safe Drinking Water Act lifetime health advisories (HAs) for two PFAS: PFOS and PFOA. These HAs recommended the individual or combined levels of PFOS and PFOA in drinking water be at or below 70 parts per trillion (ppt).



# PFAS BACKGROUND



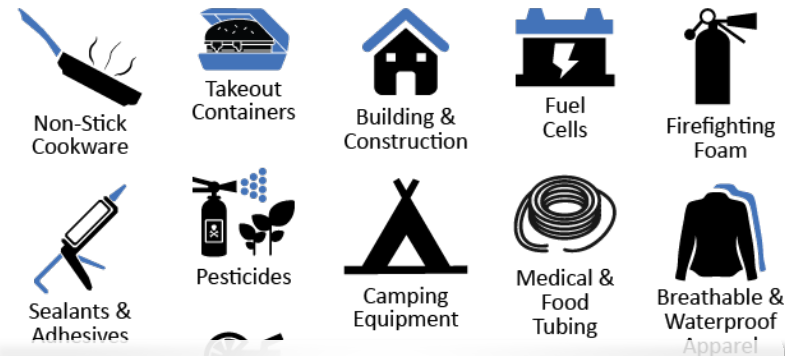
## WHAT IS CERCLA?

- CERCLA is the federal cleanup law that stands for “Comprehensive Environmental Response, Compensation, and Liability Act.”
- DOD follows CERCLA of 1980 (also known as “Superfund”) and long-standing EPA regulations for all chemicals in our cleanup program, including PFAS.



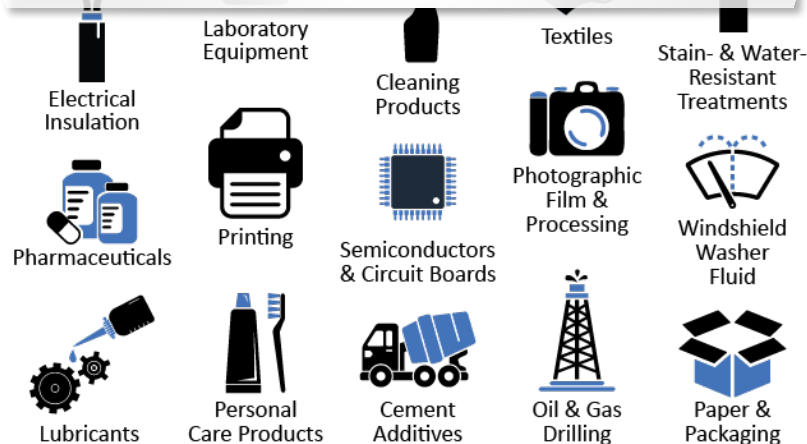


# PFAS BACKGROUND



## PFAS

A large class of substances that are used to make many products.



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- CERCLA is a multistep process:

PA/SI

Preliminary  
Assessment/Site  
Inspection

RI/FS

Remedial  
Investigation/  
Feasibility Study

RD/RA-C

Remedial Design/  
Remedial Action-  
Construction

RA-O

Remedial Action-  
Operations

LTM

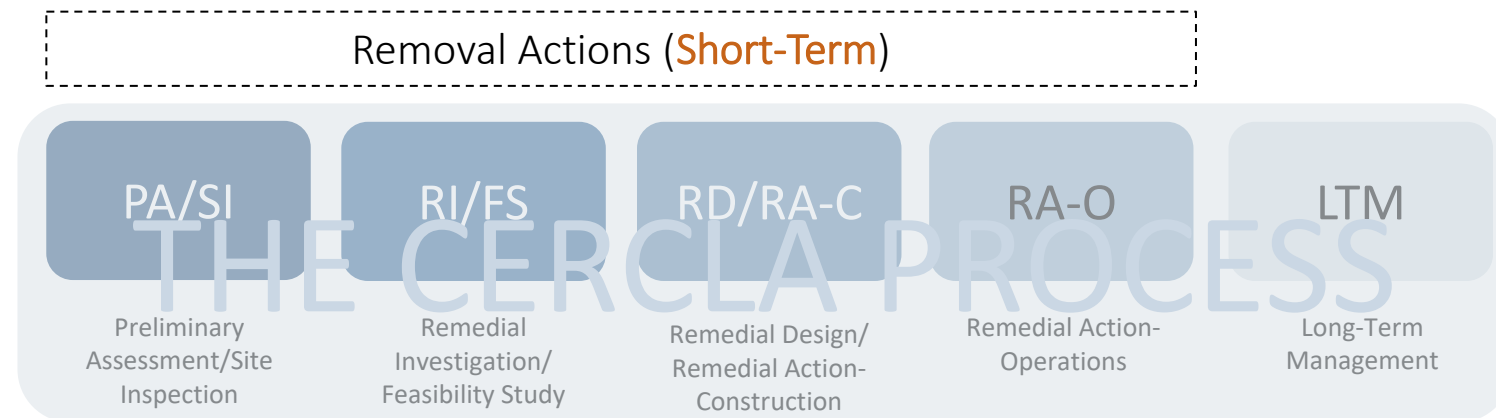
Long-Term  
Management



# PFAS BACKGROUND

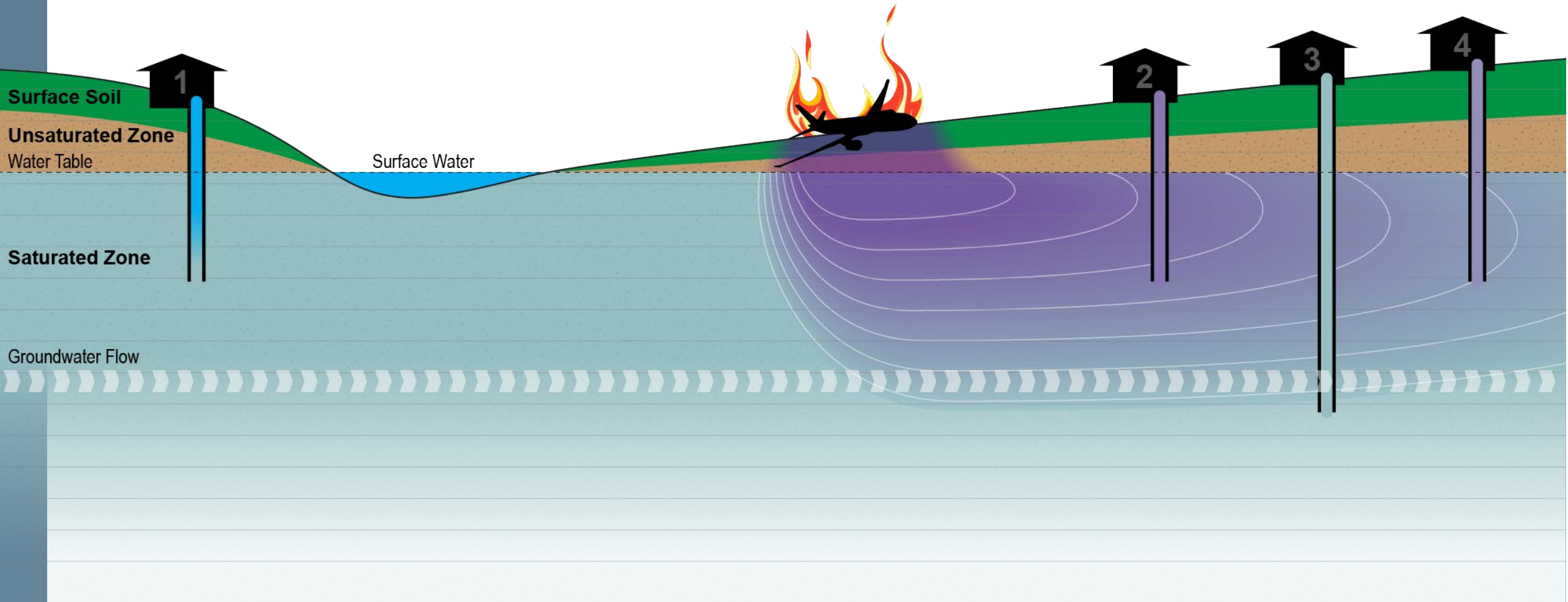
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- CERCLA is a multistep process:
  - Quick, short-term actions
  - Long-term actions



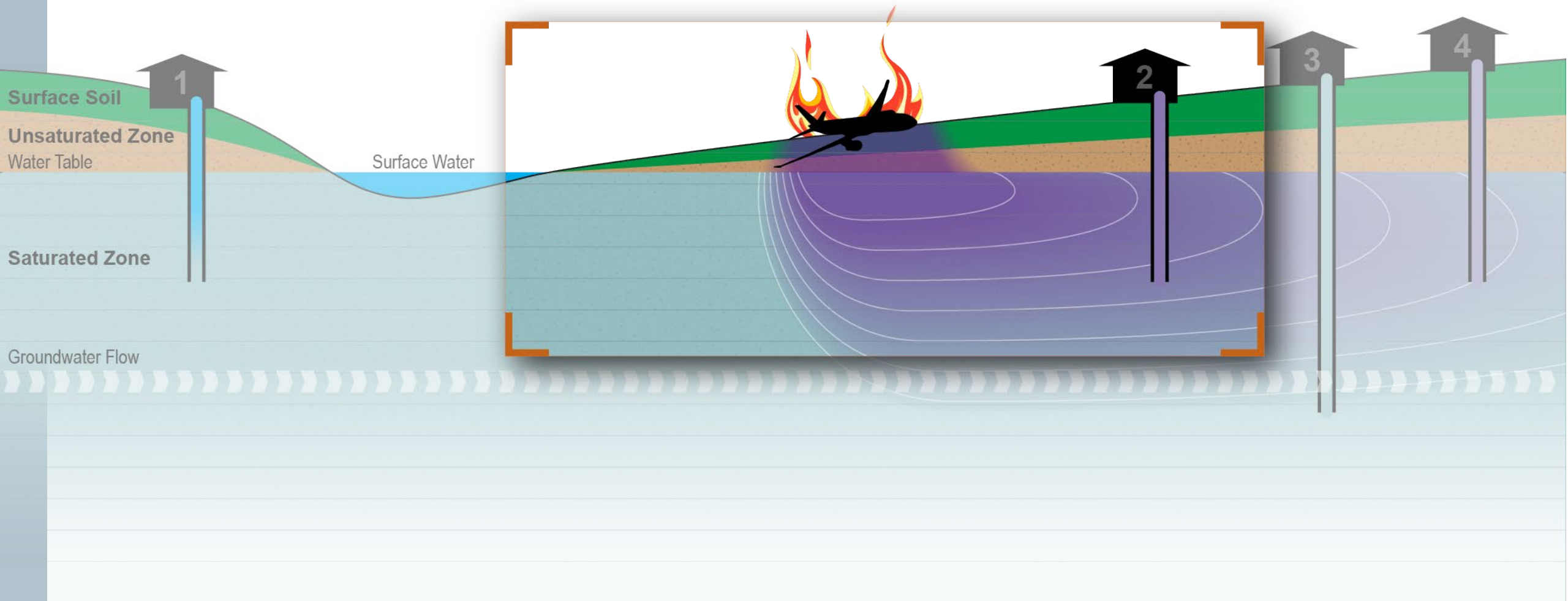


# PFAS BACKGROUND





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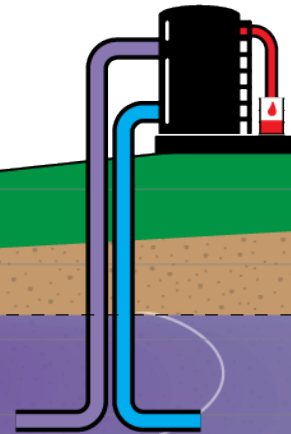
## DETERMINE: WHAT SHORT-TERM ACTION CAN BE TAKEN?



- The CERCLA multistep process includes short-term actions that can quickly address PFAS in drinking water.
- These short-term actions are called “Removal Actions.”
- One example of a short-term action is providing an alternative water supply, such as bottled water or point of use filters.

### CERCLA Remedial Action

#### Groundwater Treatment



### Short-Term Removal Action

#### Bottled Water



#### Wellhead Drinking Water Treatment



Surface Soil

Unsaturated Zone

Water Table

Saturated Zone

Groundwater Flow

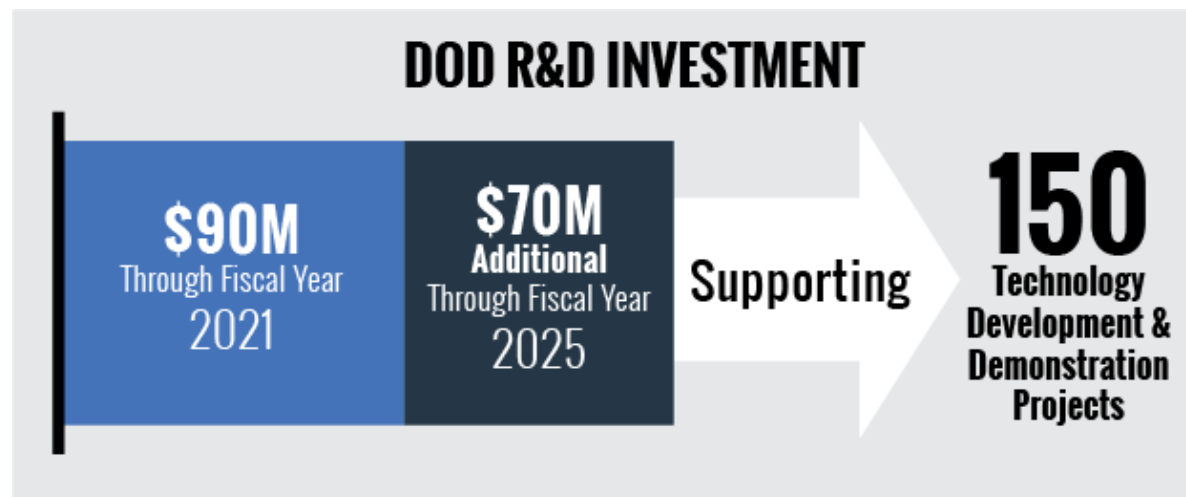




# PFAS BACKGROUND

## DOD RESEARCH AND DEVELOPMENT

- DOD invests in research and development to advance technologies to expedite the cleanup process.
  - DOD has invested over \$90M through Fiscal Year 2021 with another \$70M planned through FY2025.
  - DOD supports over 150 technology development and demonstration projects including:
    - Development of analytical methods for PFAS in media other than drinking water
    - Rapid, in-field analysis methods for mapping of impacted areas
    - Determination of pathways for PFAS migration in soil
    - Destruction methods for PFAS that do not involve incineration

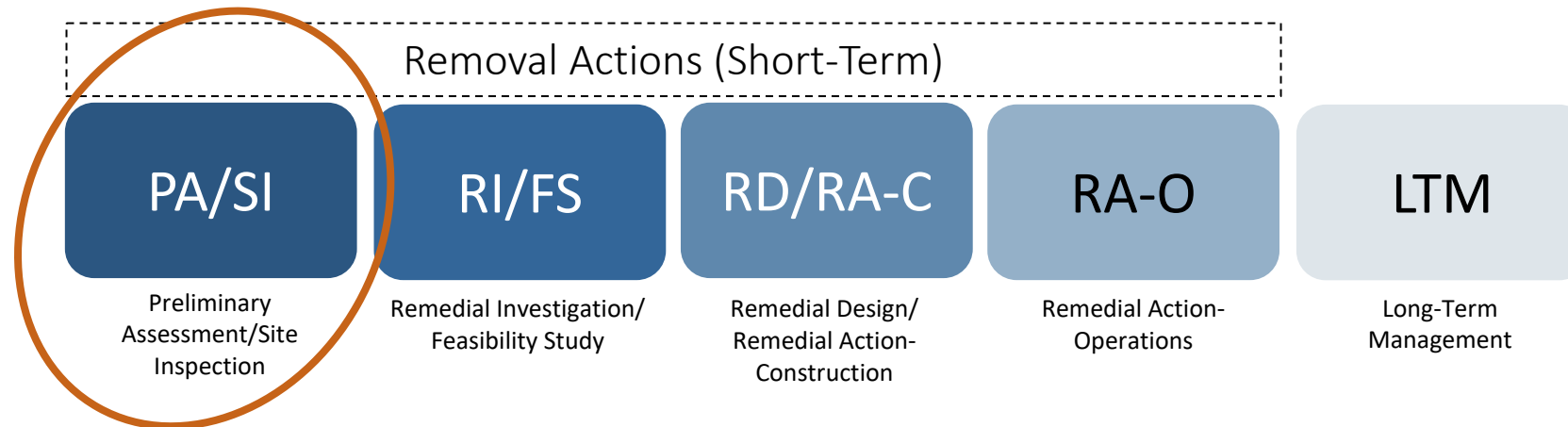




# PFAS BACKGROUND

## CERCLA IS A FEDERAL ENVIRONMENTAL CLEANUP LAW THAT INVOLVES MANY STEPS

- The CERCLA process allows DOD to take quick, short-term and long-term actions.
- **The CERCLA process begins with Preliminary Assessments and Site Inspections.**

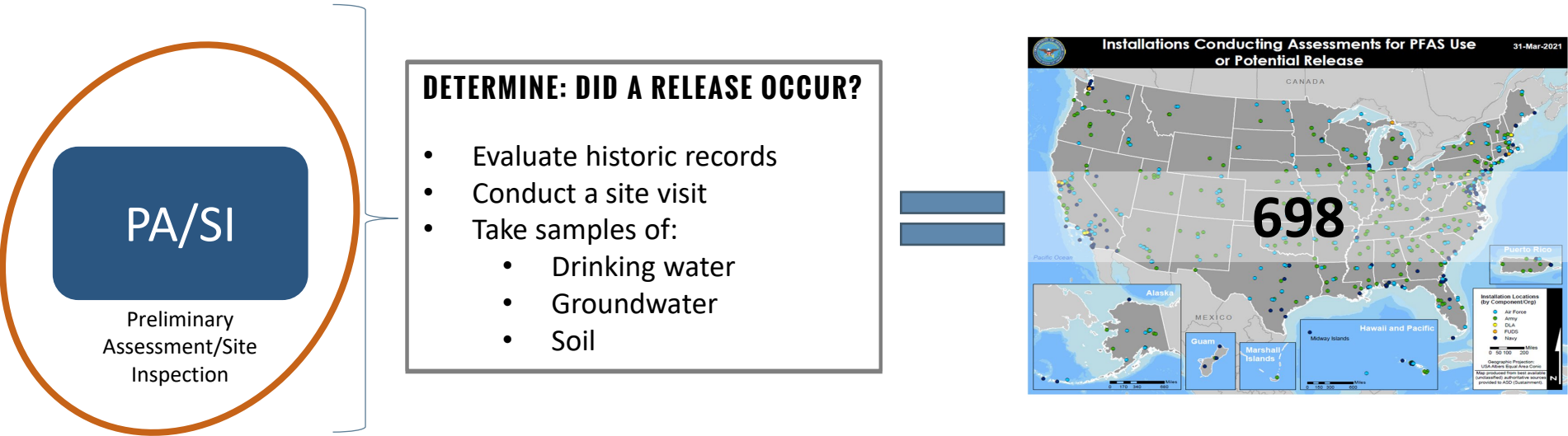




# PFAS BACKGROUND

## PRELIMINARY ASSESSMENT/SITE INSPECTION (PA/SI)

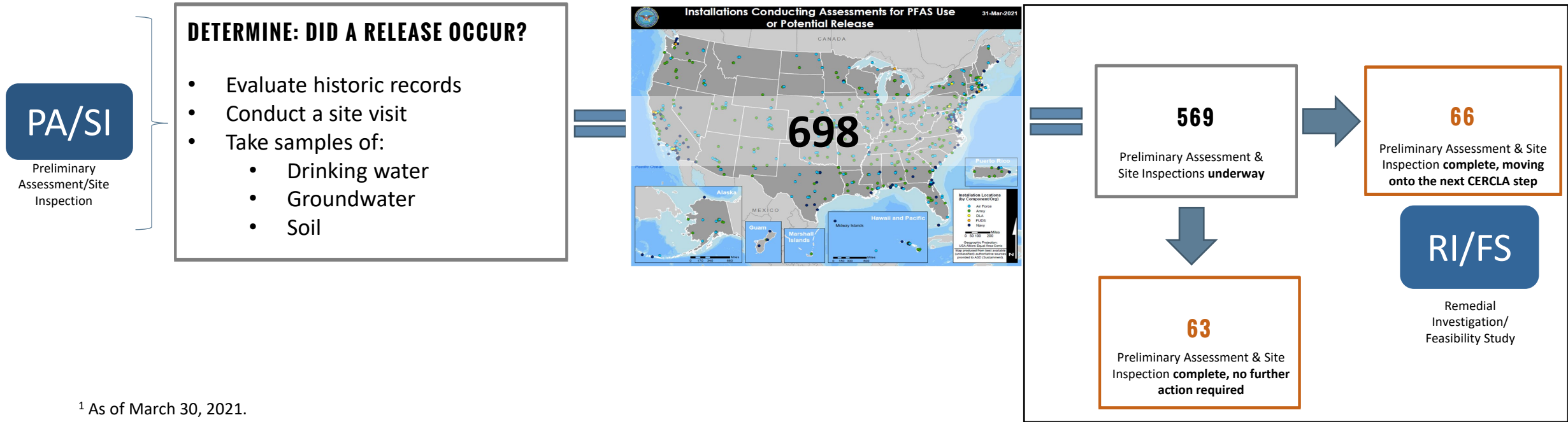
Following the CERCLA process, DOD identified **698** DOD installations and National Guard locations where PFAS **may** have been used or potentially released.





# PFAS BACKGROUND

**DOD HAS COMPLETED 129 PA/SI ASSESSMENTS, AND 569 PA/SI ASSESSMENTS ARE UNDERWAY. OF THE 129 COMPLETED PA/SI, 63 REQUIRE NO FURTHER ACTION,<sup>1</sup> AND 66 ARE PROCEEDING TO RI/FS.**




<sup>1</sup> As of March 30, 2021.



# PFAS BACKGROUND: A TIMELINE OF ACTION ALREADY TAKEN



MAY  
EPA health advisory for  
PFOS & PFOA at or  
below 70 ppt.

**PFOS & PFOA** 

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# PFAS BACKGROUND: A TIMELINE OF ACTION ALREADY TAKEN

FY2016	FY2017	FY2018	FY2019	FY2020	FY2021
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FY2016

JANUARY

DOD issues policy requiring prevention of uncontrolled land-based AFFF releases during maintenance, testing, and training activities.

MAY

EPA health advisory (HA) for PFOS & PFOA at or below 70 ppt.

## LIMITED USE OF AFFF

Today DOD no longer uses AFFF for land-based testing or training unless it can be fully contained and appropriately disposed.

DOD firefighters training with water.



## PFOS & PFOA


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<b>FY2016</b> <b>JANUARY</b> DOD issues policy requiring prevention of uncontrolled land-based AFFF releases during maintenance, testing, and training activities.	<b>LIMITED USE OF AFFF</b> Today DOD no longer uses AFFF for land-based testing or training unless it can be fully contained and appropriately disposed.	
<b>MAY</b> EPA health advisory (HA) for PFOS & PFOA at or below 70 ppt.	<b>PFOS &amp; PFOA</b> 	
<b>JUNE</b> DOD begins testing DOD-operated drinking systems worldwide.	<b>TESTING DRINKING WATER</b>  DOD directed Military Departments to test for PFOS & PFOA everywhere that DOD supplies drinking water.	





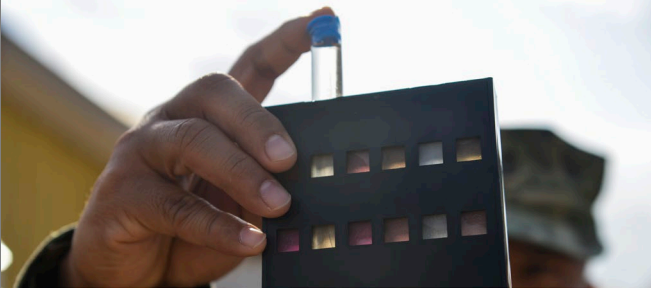
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START

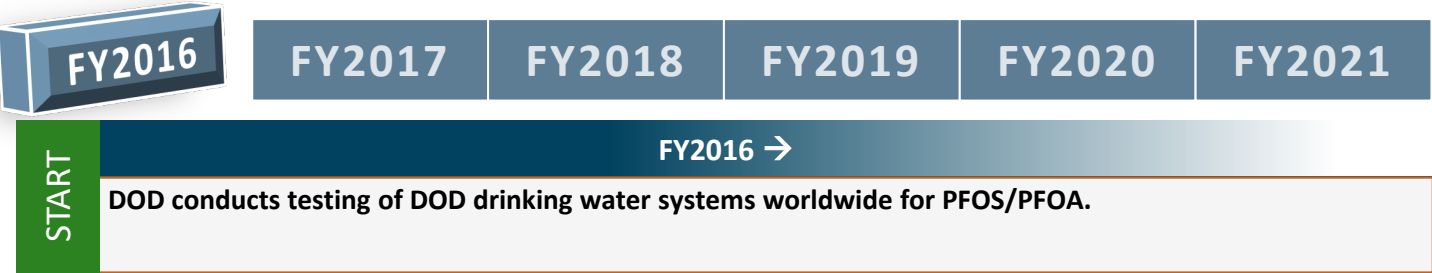
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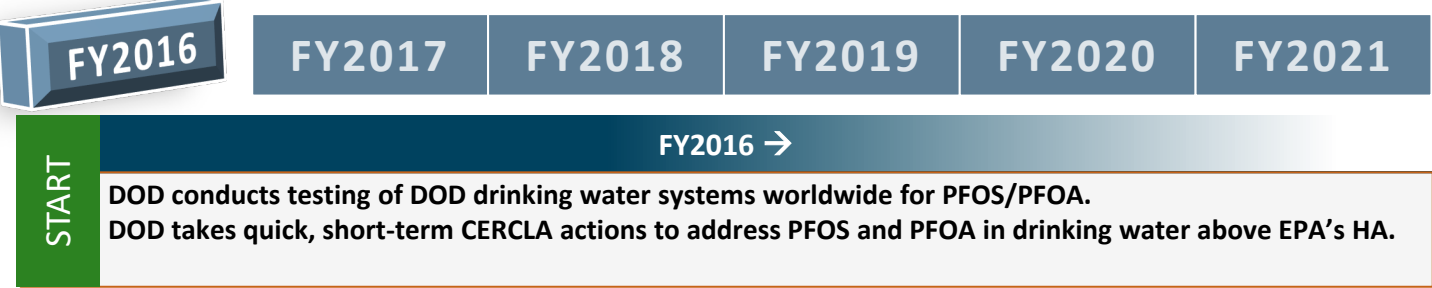
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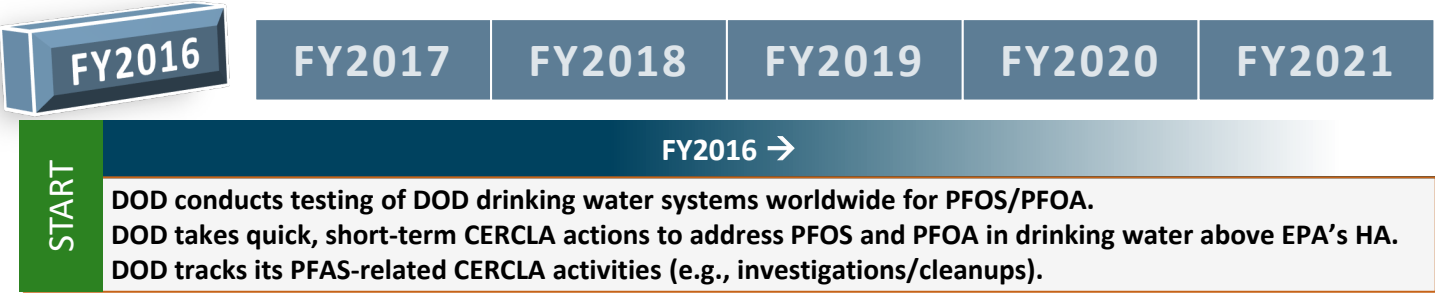






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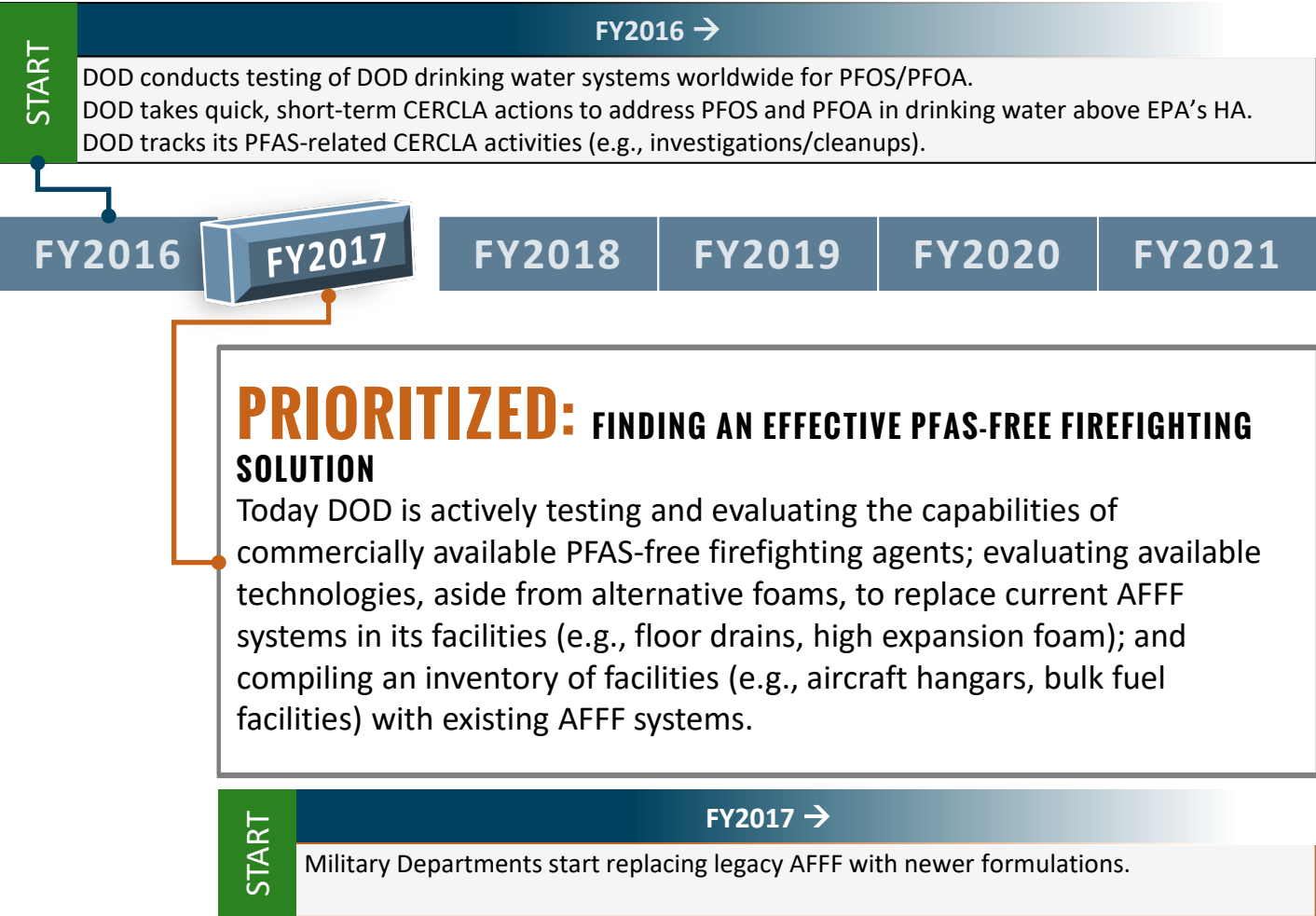
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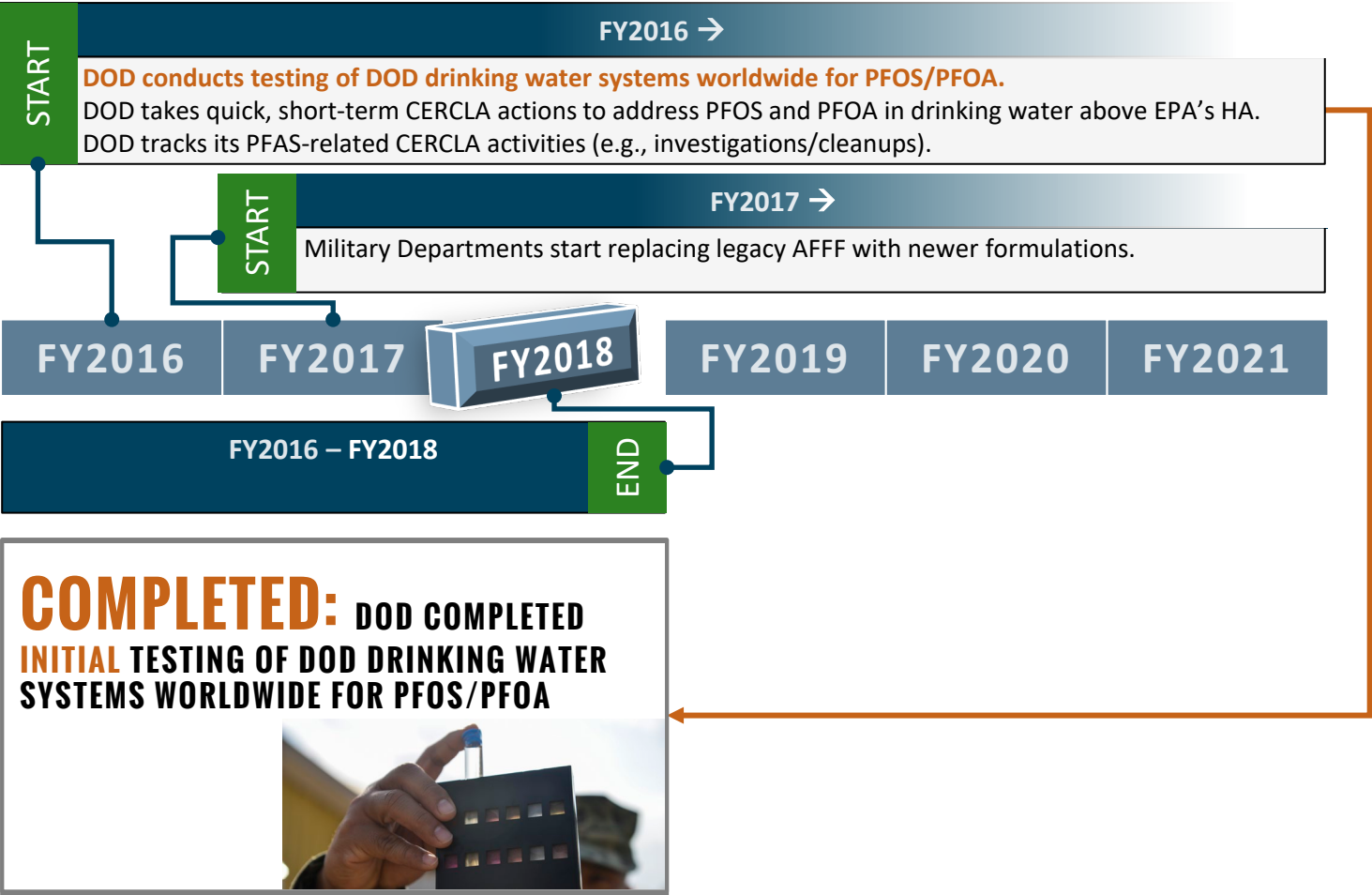
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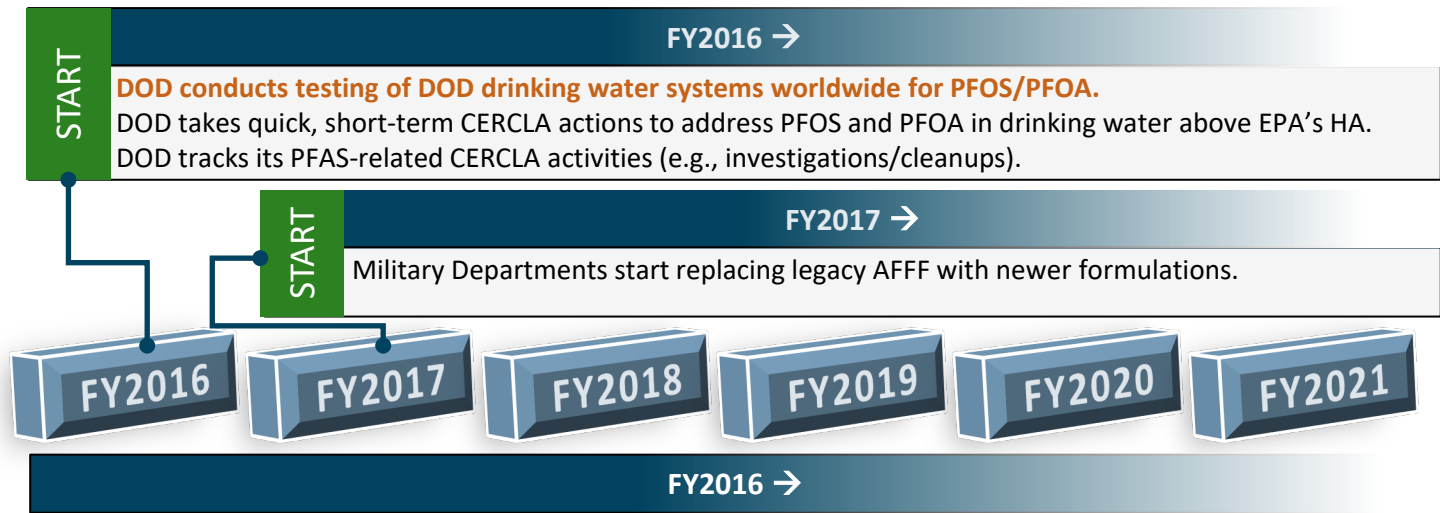
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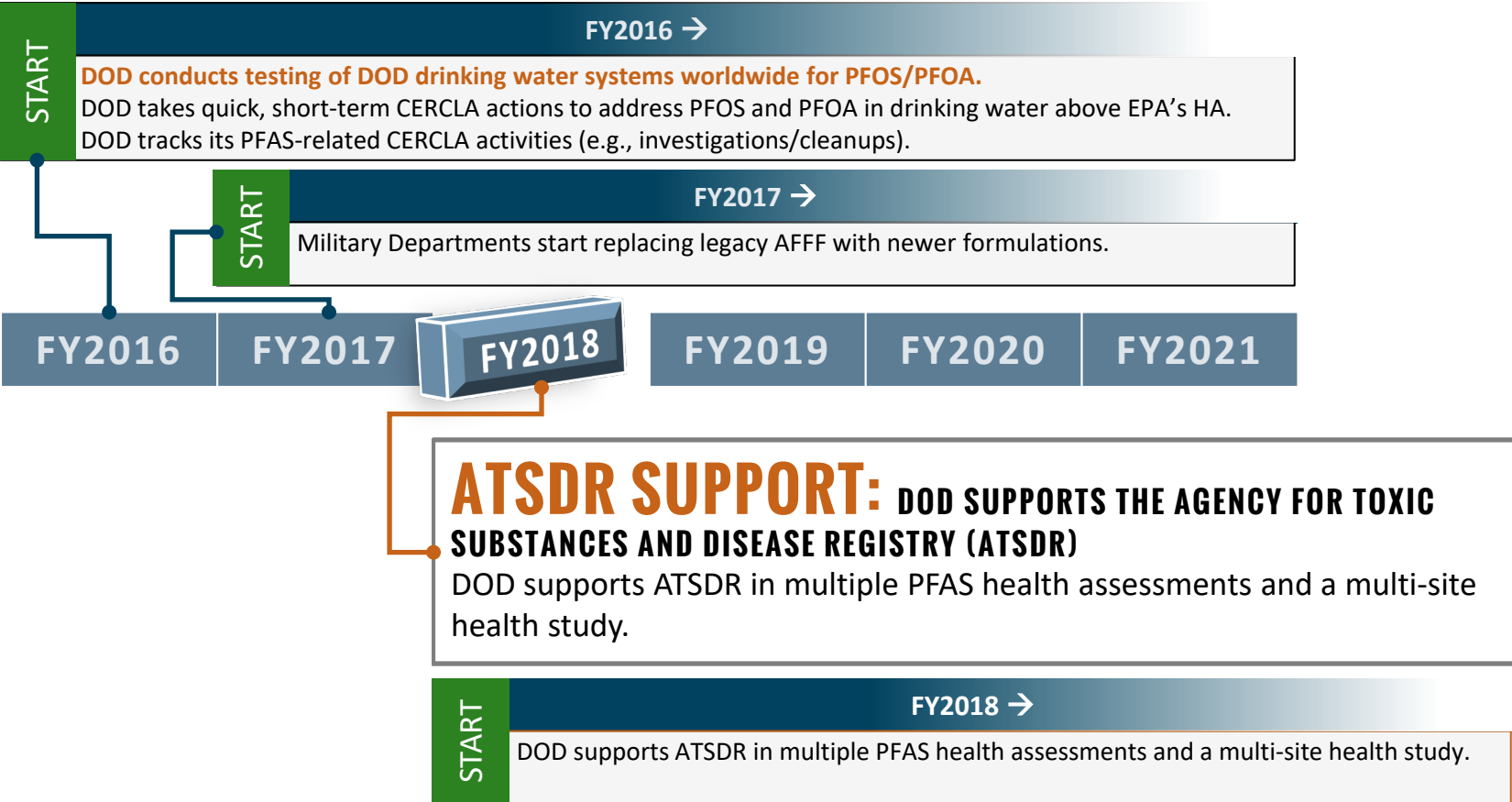






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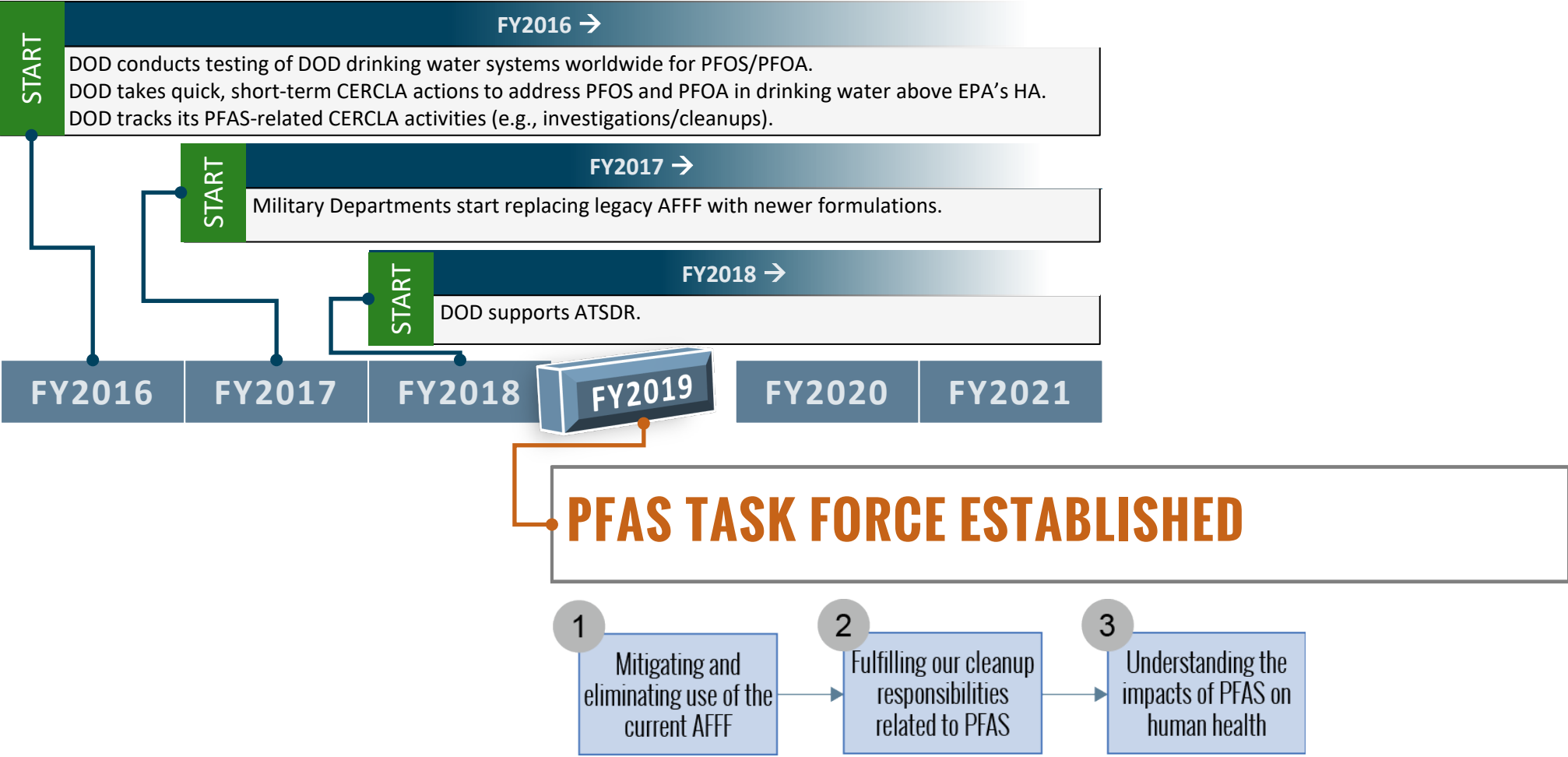
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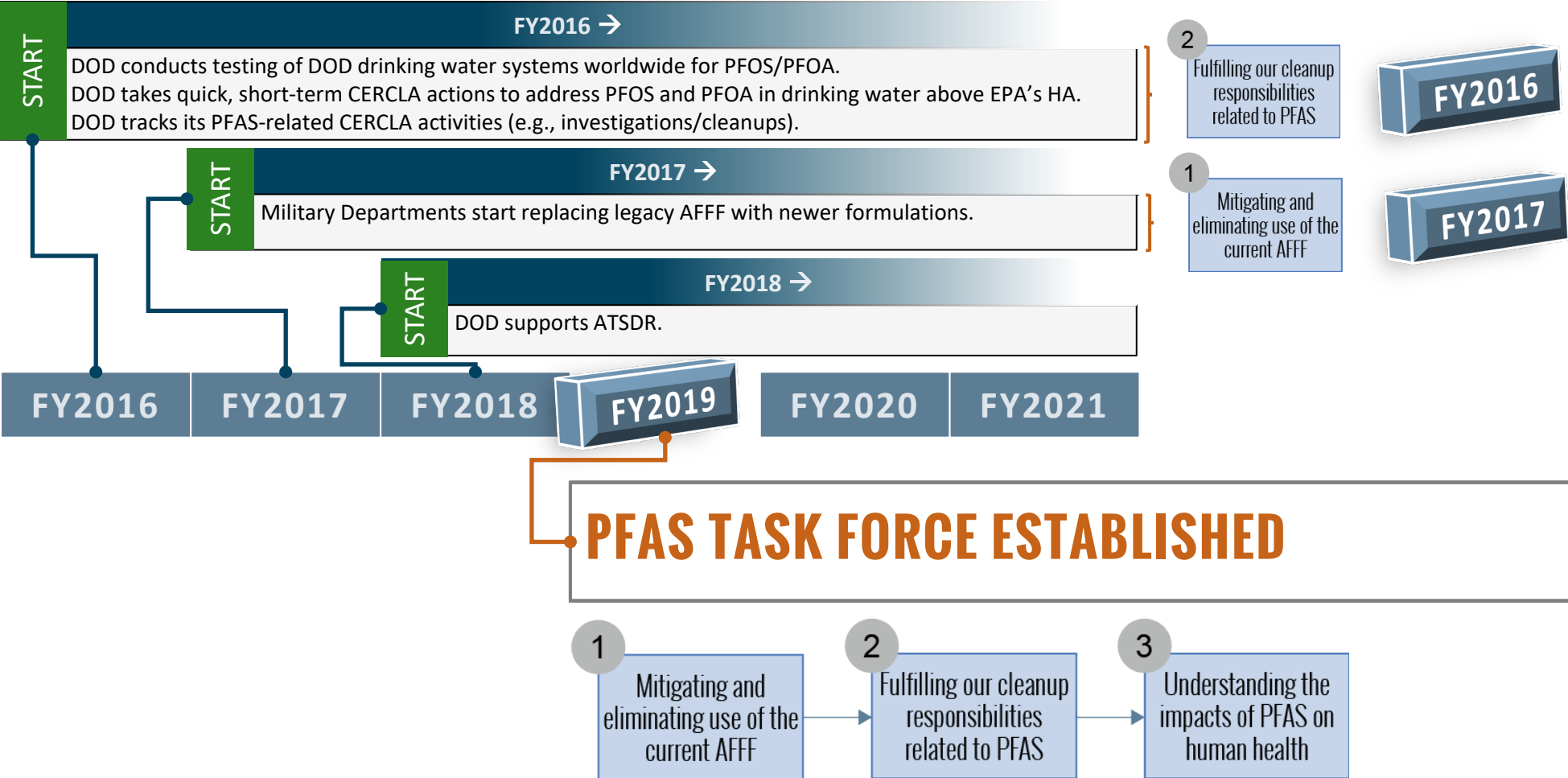
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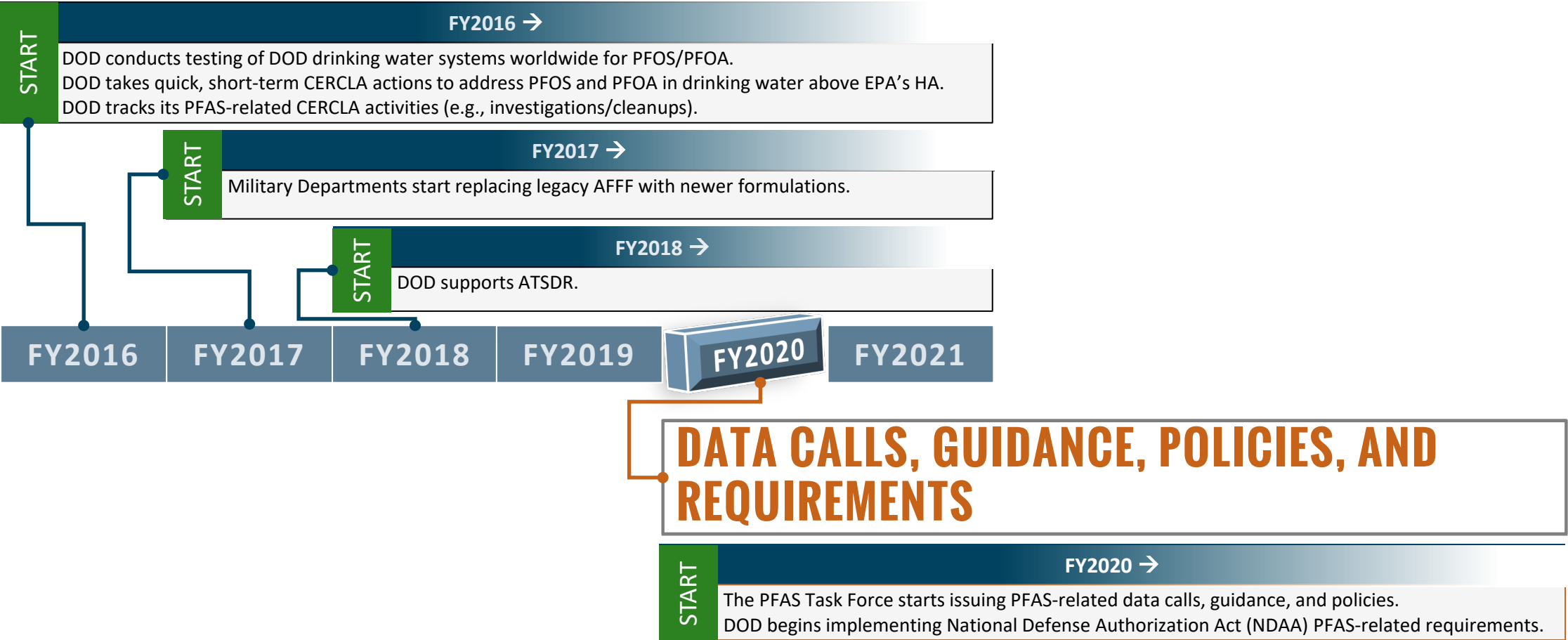
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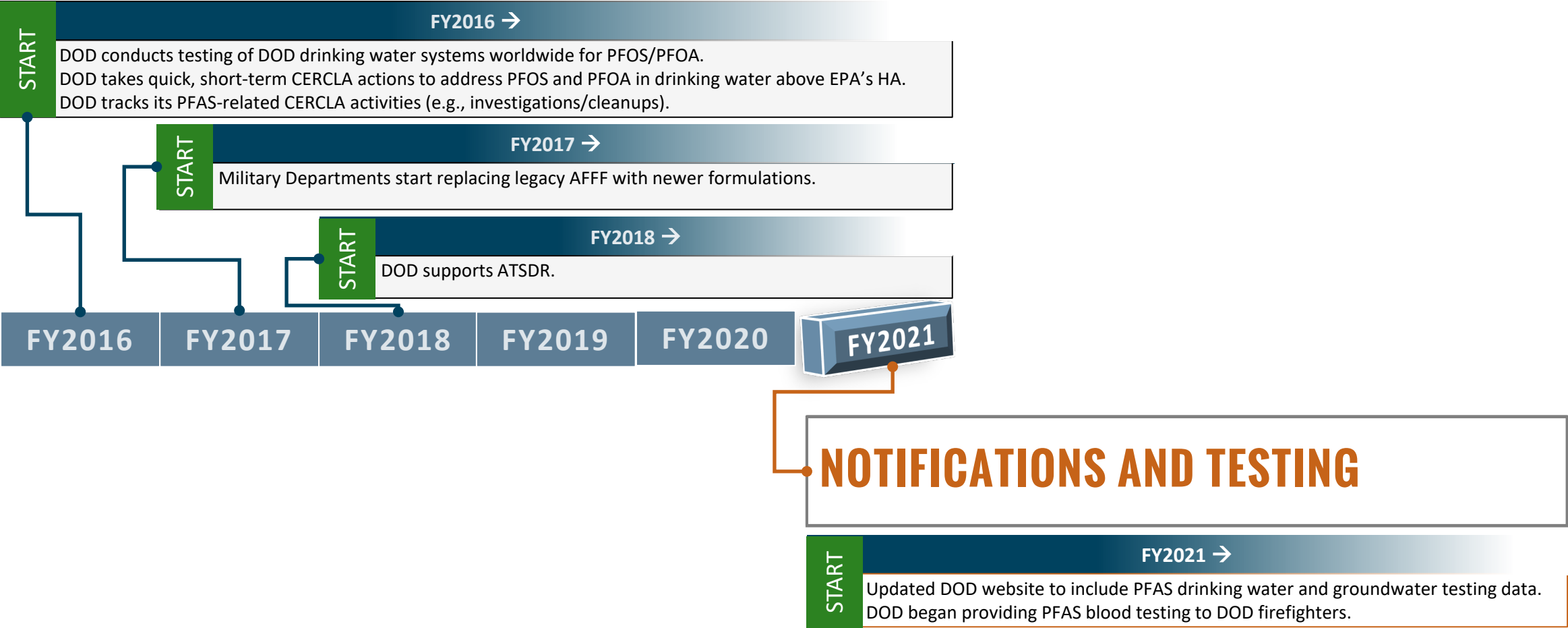
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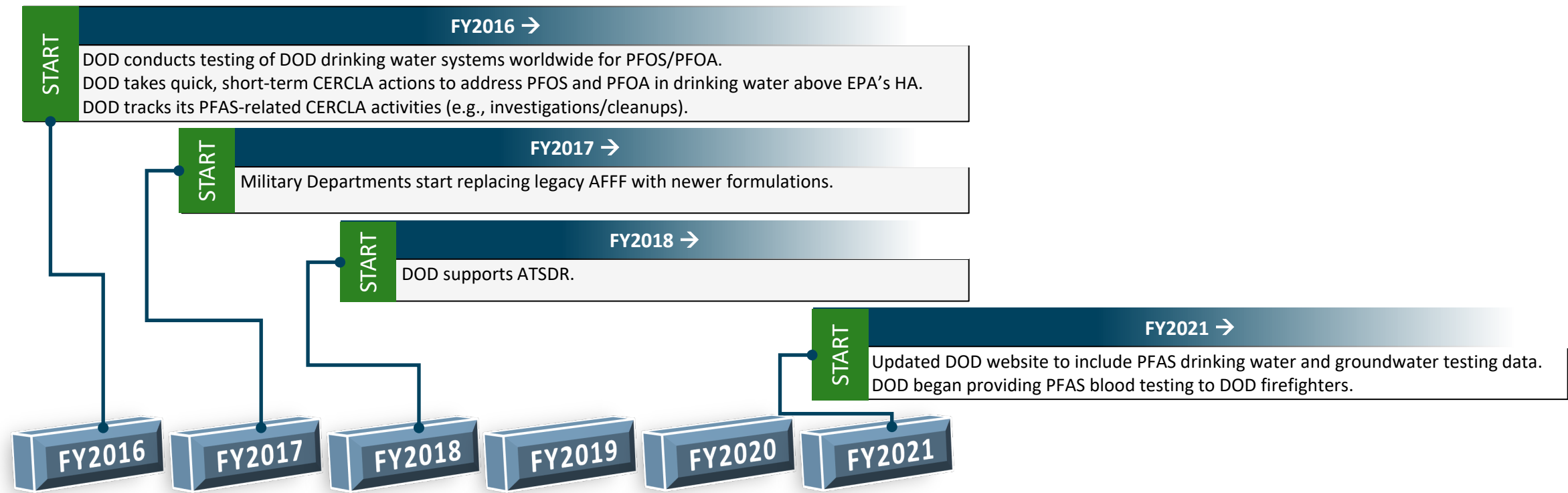
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# PFAS BACKGROUND: A TIMELINE OF ACTION ALREADY TAKEN

**PFAS IS A MULTI-YEAR, IF NOT A MULTI-DECADE, EFFORT WITHOUT A RAPID SOLUTION**



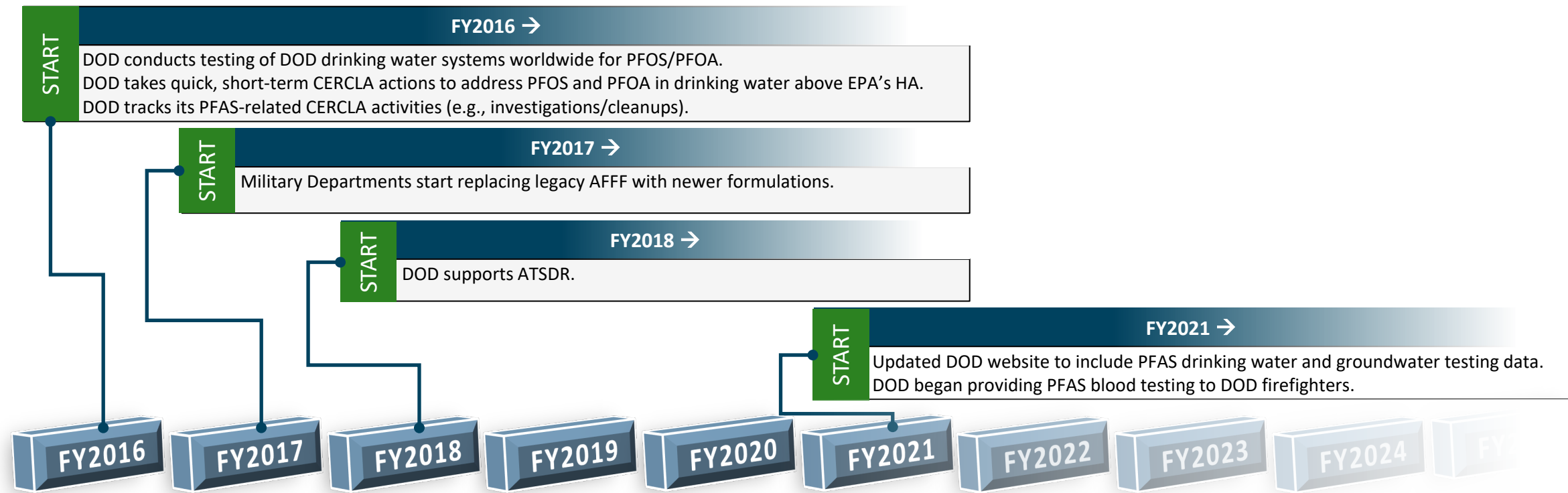
“Years to define the problem...”





# PFAS BACKGROUND: A TIMELINE OF ACTION ALREADY TAKEN

PFAS IS A MULTI-YEAR, **IF NOT A MULTI-DECADE, EFFORT WITHOUT A RAPID SOLUTION**



“Years to define the problem, decades to clean it up.”



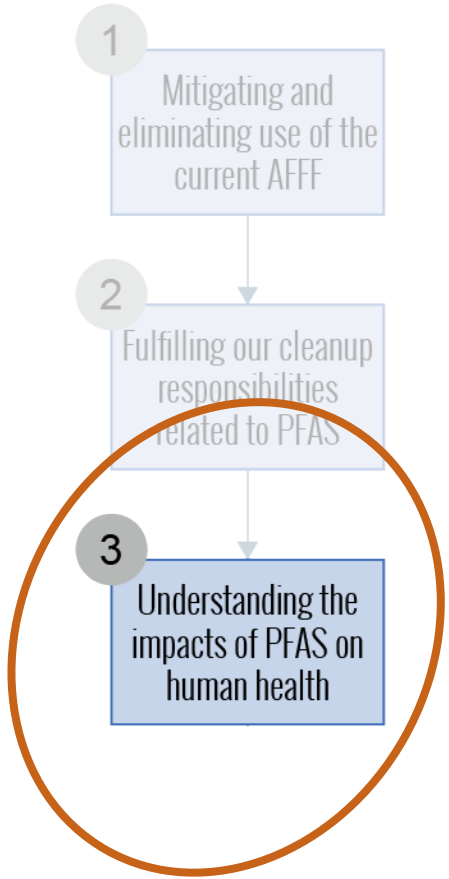
# PFAS TASK FORCE: UNDERSTANDING THE IMPACT OF PFAS ON HUMAN HEALTH

## RESEARCH AND EDUCATION

- The Department continues educating its healthcare providers and their patients; monitoring PFAS exposure research and data; and collaborating with the Department of Veterans Affairs, Department of Health and Human Services, and other federal agencies.

## TESTING DOD FIREFIGHTERS' BLOOD LEVELS

- The Department is providing testing for PFAS in DOD firefighters' blood as required by the FY 2020 NDAA.





# PFAS TASK FORCE: EXPANDING PFAS-RELATED PUBLIC OUTREACH

## THE DEPARTMENT IS COMMITTED TO INCREASING TRANSPARENCY AS WE CONTINUE TO ADDRESS PFAS

- Added a fourth PFAS Task Force goal of “Expanding PFAS-related public outreach.”
- Expanding outreach efforts to the public through regular community engagements by senior officials and at the local level.
- Updated DOD website to include PFAS drinking water and groundwater testing data.
  - <https://denix.osd.mil/dod-pfas/>
- Reviewing our Restoration Advisory Board procedures and look for best practices.

## POTENTIAL TOPICS FOR FUTURE OUTREACH ENGAGEMENTS?

- AFFF replacement progress
- PFAS cleanup technologies
- PFAS cleanup detailed update

