NTP
National Toxicology Program

Operationalizing the DNTP Strategic Realignment

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Scientific Director, Division of NTP
National Institute of Environmental Health Sciences

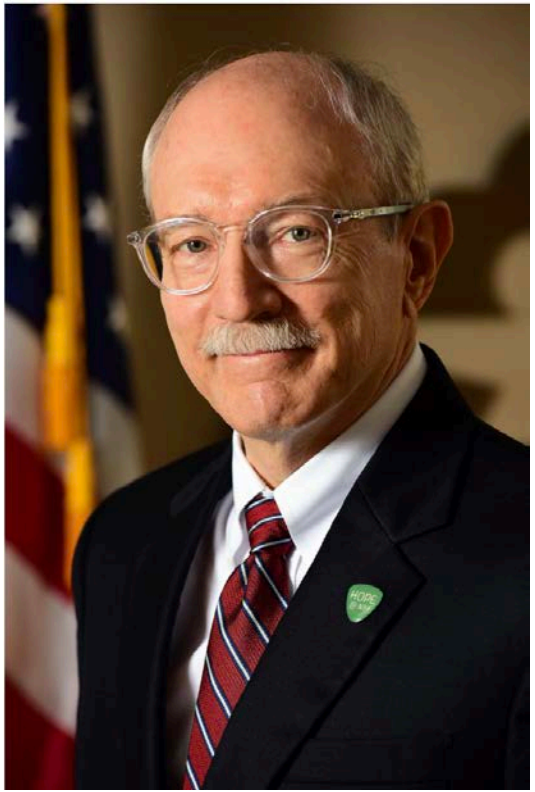
NTP Board of Scientific Counselors Meeting
December 3, 2020

Aims of Today's Meeting

- Remind you of our strategic framework
- Provide insights into the current state of DNTP
- Look forward

New Director

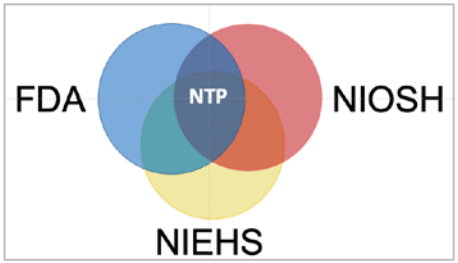
Rick Woychik, PhD
Director, NIEHS
Director, NTP



Key Pillars – NIEHS

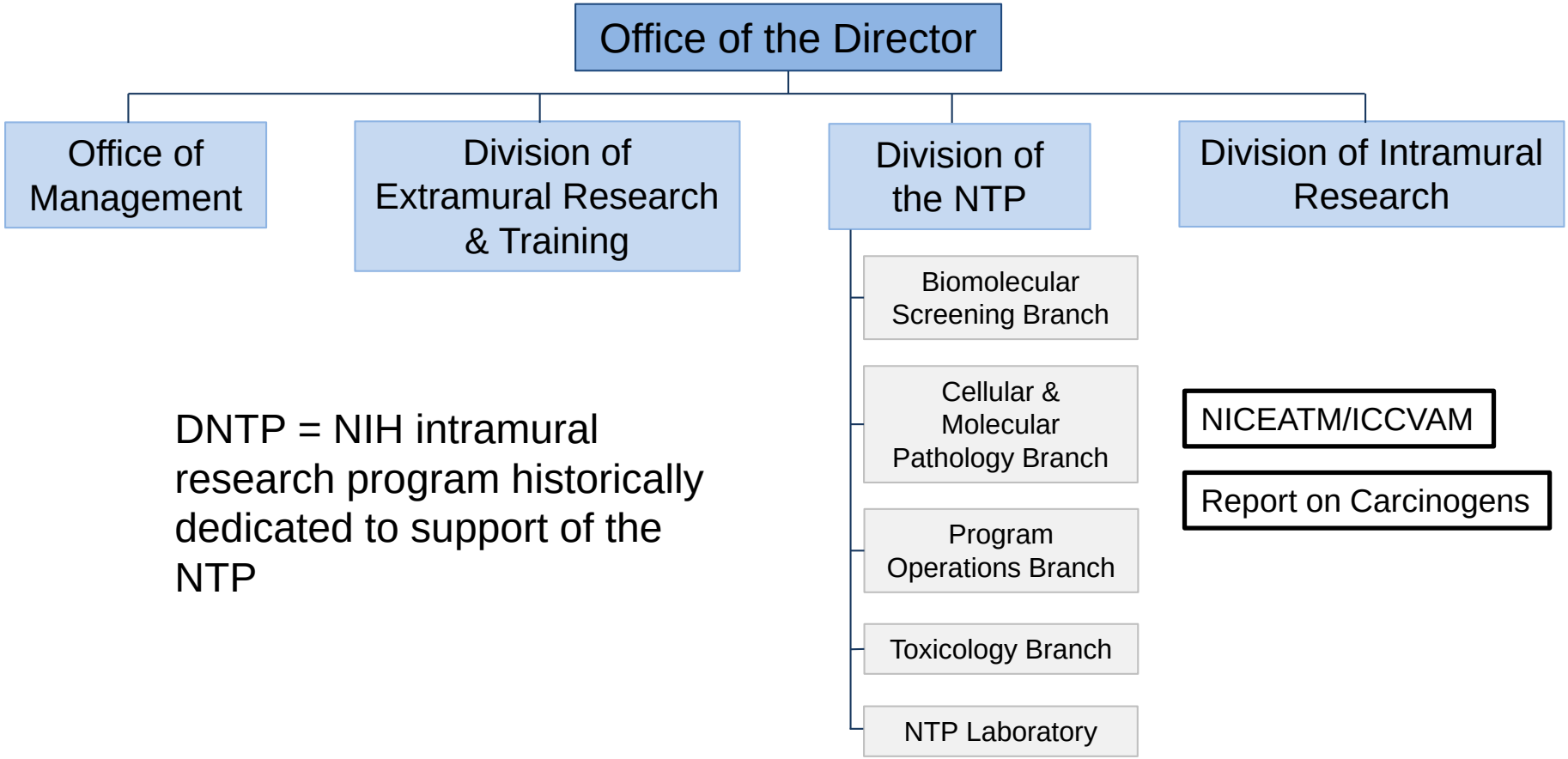
- Workforce DEI
- Innovation
- Collaboration
- Leadership
- Prevention

NTP Vision



National Institute of Environmental Health Sciences

NIEHS Organizational Structure



DNTP = NIH intramural research program historically dedicated to support of the NTP

Our Strengths – NTP BSC Feedback

- NTP's key value is our ability to take on complex problems requiring prolonged focus – i.e., the stuff nobody else can or will do!
- 'Human relevance' is at multiple levels
  - Risks to human populations
  - Evaluating hazards under human-relevant conditions
  - Using human-relevant models
- Confidence in new approaches (i.e., our innovation responsibility)
  - NTP has a role to play in piloting novel approaches that inform the broader community
  - Confidence comes from 'human relevance'

Mission and Goals of the DNTP

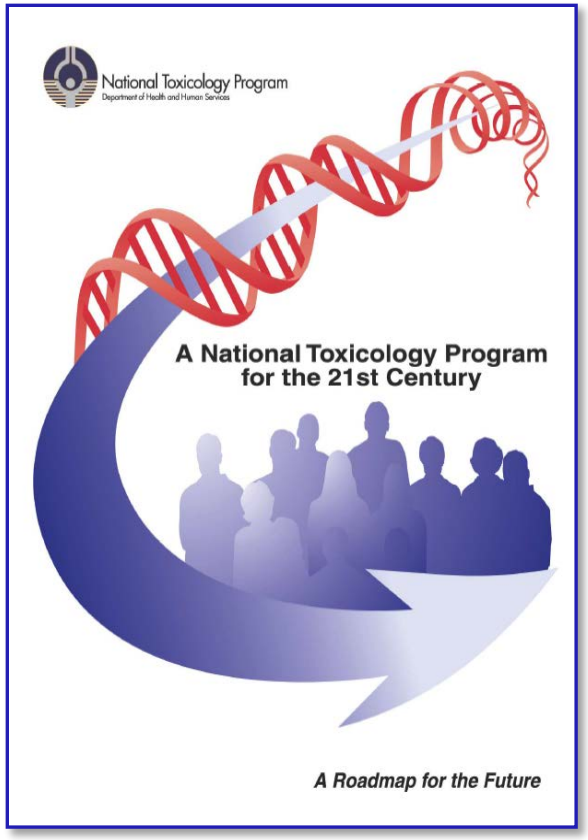
Mission

- To improve public health through the development of data and knowledge that are translatable, predictive and timely.

Goals

- Collaborate with public stakeholders and global partners to identify and address public health issues.
- Generate and communicate trusted scientific information to support decision-making on environmental hazards of public interest.
- Lead the transformation of toxicology through the development and application of innovative tools and strategies.
- Educate and train the next generation of translational scientists to be innovative leaders in the field.

Framework for Our Strategic Realignment



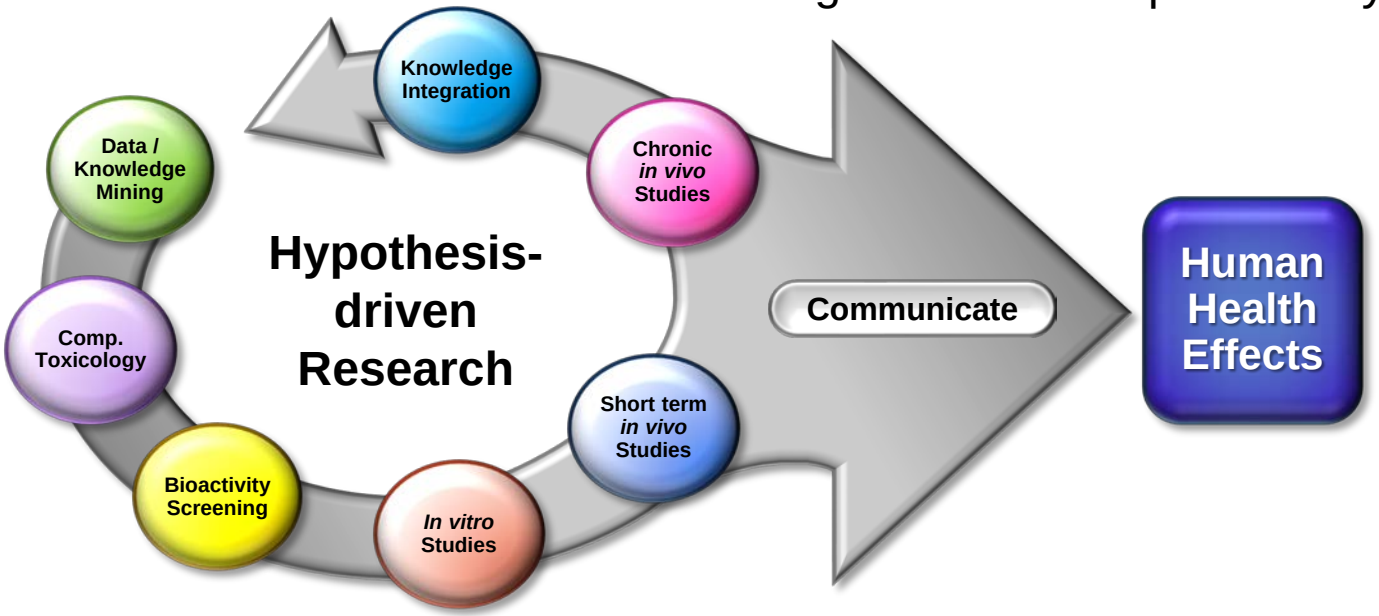
A National Toxicology Program for the 21st Century, November 2004

21st Century Vision

To support the evolution of toxicology from a predominately observational science at the level of disease-specific models to a predominately predictive science focused upon a broad inclusion of target-specific, mechanism-based, biological observations.

Strategic Pipeline of Capabilities

Applying our capabilities in deliberate, integrated and complementary ways.

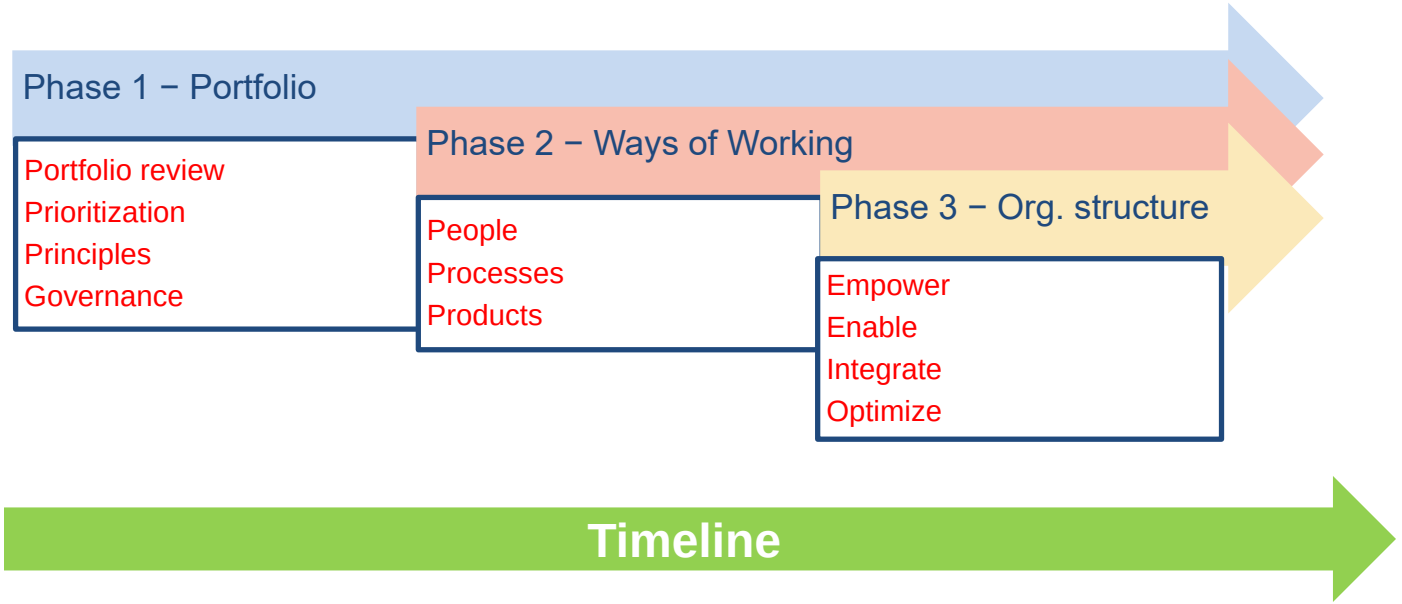


Translational Toxicology Pipeline

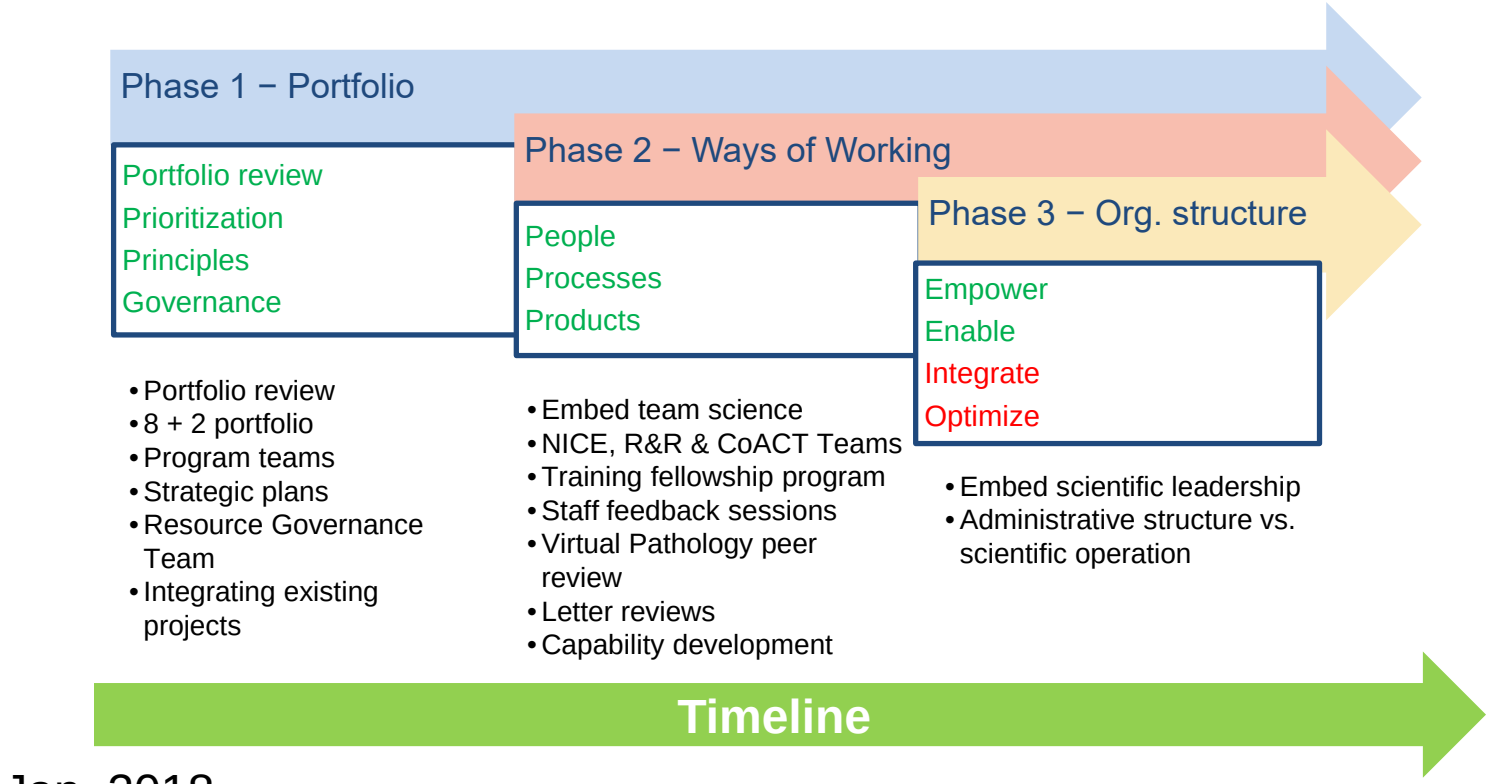
Reinventing the Plane in Flight

DNTP Strategic Realignment – 3 Phases

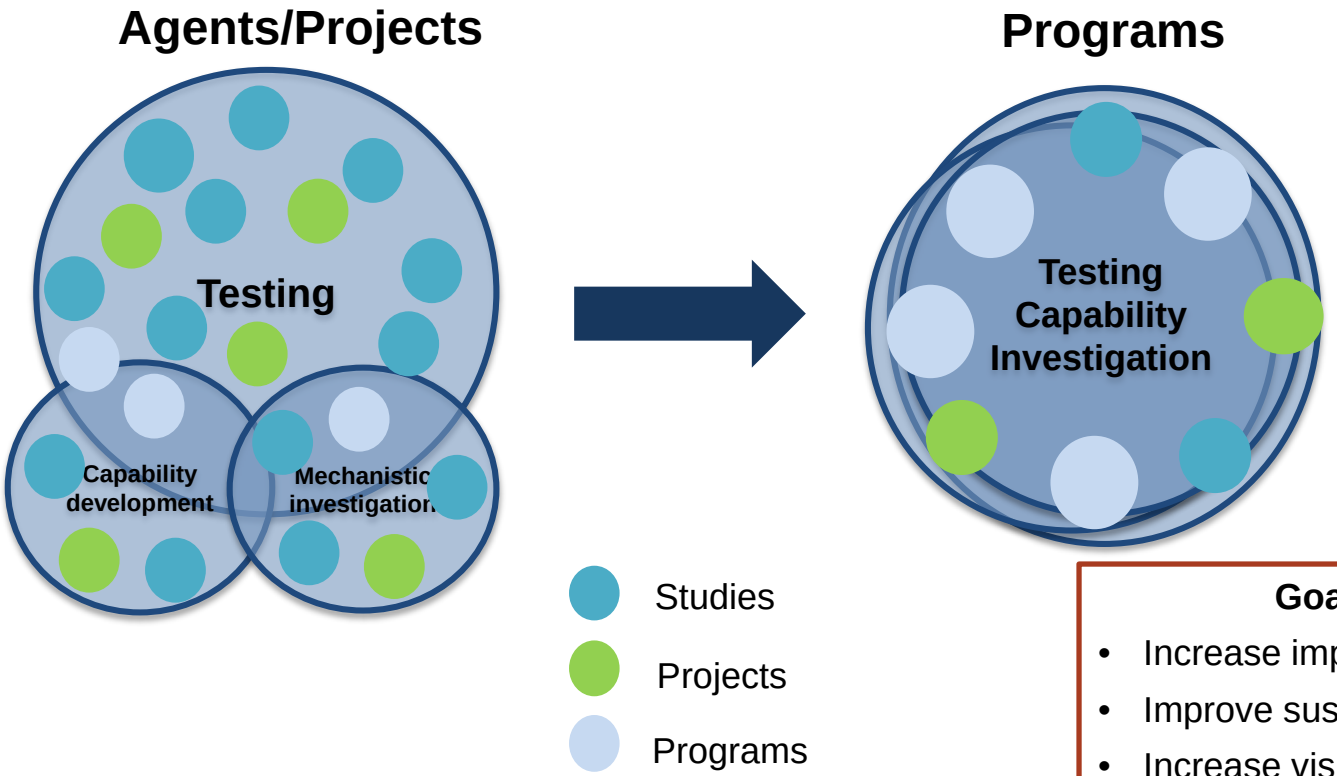
Optimizing our portfolio, processes and structure



DNTP Strategic Realignment – 3 Phases



Evolving Our Portfolio



Goals

- Increase impact
- Improve sustainability
- Increase visibility
- Improve complementarity

Workforce Assessment, Strategy, and Plan

We need a plan to evolve our workforce to be one that is diverse, that has the skills to deliver an innovative and leadership-based mission, that has clear paths to career development, that receives the recognition it deserves, and that has the resilience and sustainability to handle whatever the future brings.

Mark Miller, PhD

Mark will lead a DNTP workforce assessment and planning effort engaging stakeholders across DNTP, NIEHS, and externally.

National Institute of Environmental Health Sciences

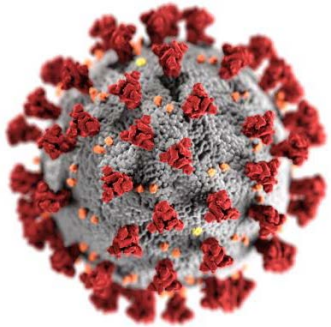
1st Inaugural

State of the DNTP

Resources

- FY2020 Budget Allocation
  - Intramural funding − $22.5M
    - HR (salaries, benefits)
    - Operating expenses (supplies, equipment, laboratory research, training, travel)
  - R&D funding − $92.1M
    - Contracts, IAAs
    - N = ~25
- Personnel
  - N = 113 federal staff

COVID Response



- Widespread and effective adaptation to full time telework
- Adoption and integration of virtual tools into workflows
  - Teams, Zoom, DNTP Wiki, SharePoint
  - Virtual social events
  - Digital Pathology Working Groups (PWGs)
- COVID research proposals developed under tight timelines
- Safe transition to return to onsite work of Groups A and B to NIEHS campus
  - Core CMPB labs-creative and resourceful in adapting to COVID-19 operation
- Details/Deployments/Committees

Products, Impact, Influence

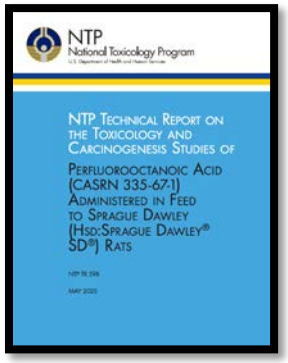
Journal & NTP Publications

Public Health Impacts

Media Attention

NTP Website Activity

FY 2020 NTP Report Series



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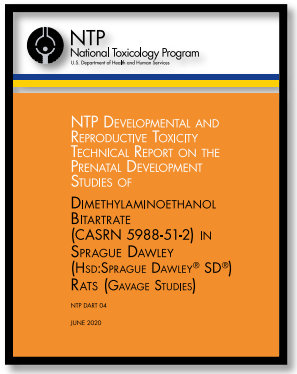

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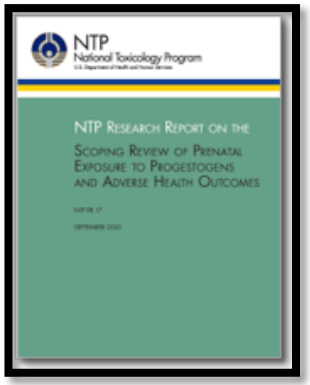

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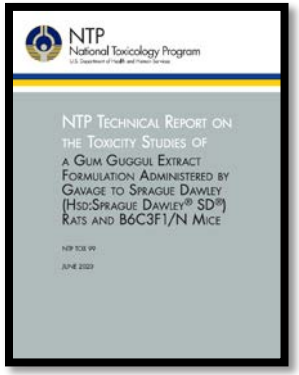

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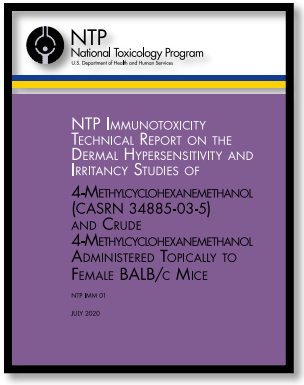


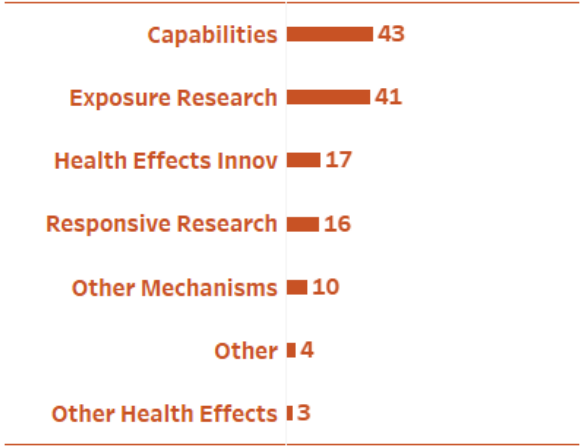
X 1

We Had 134 Publications

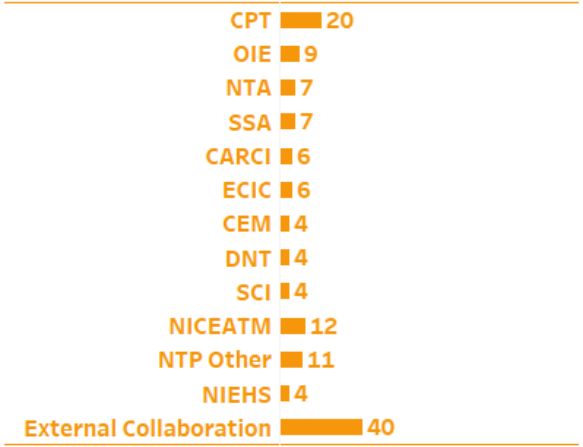
Publication Type

Study Type

Strategic Focus Area



Program



Publication List

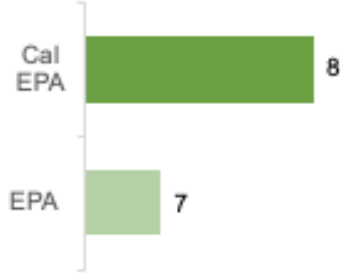
2019	A Prospective Analysis of Red and Processed Meat Consumption and Risk of Colorectal Cancer in Women
	Chronic inflammation in the etiology of disease across the life span
	Commentary: Mutation as a toxicological endpoint for regulatory decision-making
	Development and Validation of an Analytical Method for Quantitation of Monobutylphthalate, a Metabolite of D..
	Disposition and metabolism of N-butylbenzenesulfonamide in Sprague Dawley rats and B6C3F1/N mice and in ..
	DNA damage responses in murine Pre-B cells with genetic deficiencies in damage response genes
	Endocrine Disruption and Reproductive

134

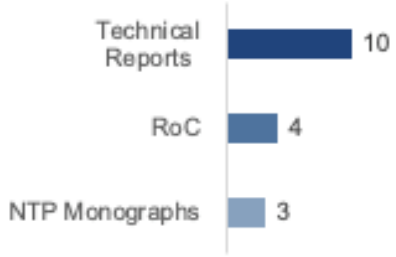
Publications

Federal and State Agencies Used NTP's Work to Inform Public Health Decision Making

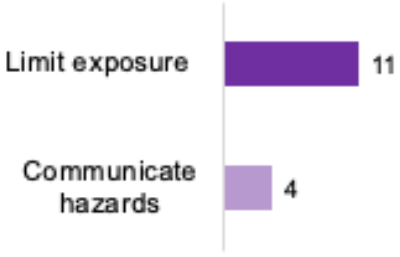
Who used DNTP's work?



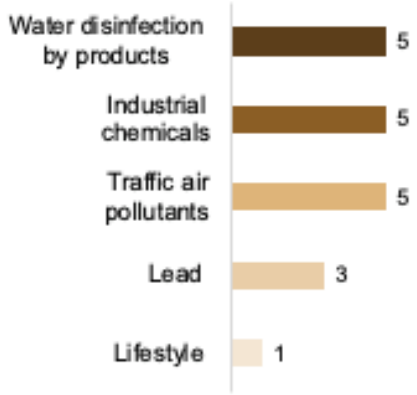
What work was used?*



What action was taken?



What was the topic?**



Federal agencies or states issued 16 proposed or final rules

*Some regulations cited multiple DNTP products and product type
**Some regulations were on multiple topics

Media Mentions and Stories

5 Topics

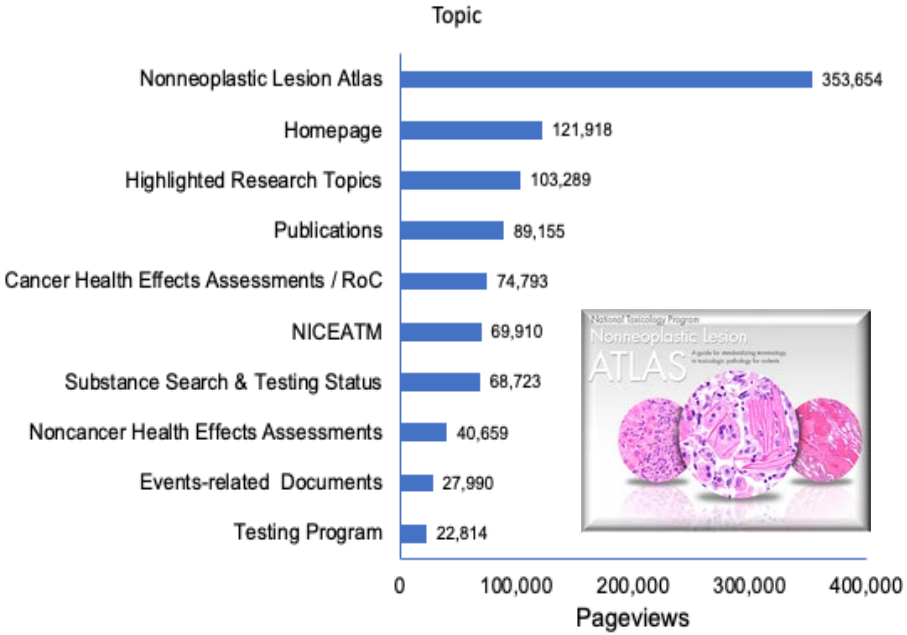
13 Media Outlets

19k – 171M Potential Reach

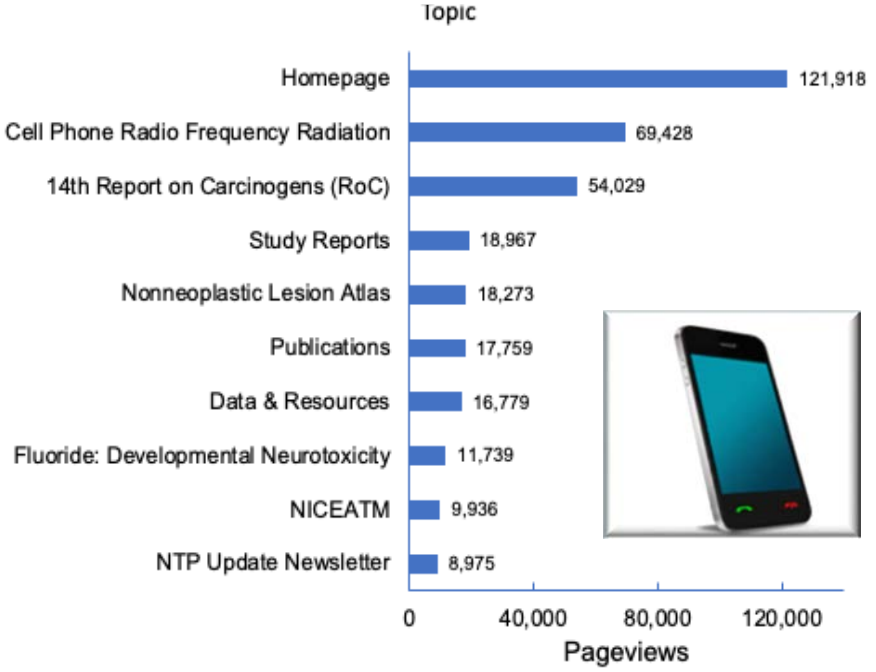
600 – 8.5k Social Media Engagements

People Viewed Our Webpages 1.1M Times

Top 10 Page Categories



Top 10 Specific Pages



Databases Offered More Data and Tools

Integrated **C**hemical **E**nvironment

- Versions 3.0 and 3.1 launched
- Improvements to tools for searching, data integration and analysis, IVIVE, output graphics, and chemical characterization
- More data, results metadata, chemical information, and better user interface

Total Pageviews	Total Downloads
10.4k	1k

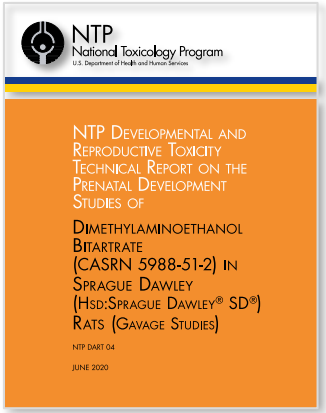
Chemical **E**ffects in **B**iological **S**ystems

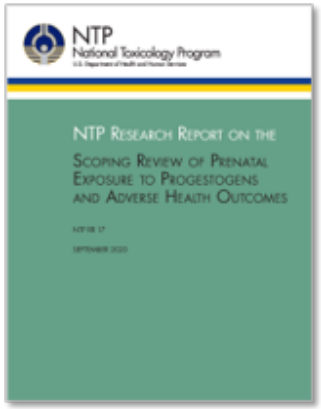
- More data and updated toxicogenomic benchmark dose response tool
- Selected NTP data combined into a single data warehouse and available for querying via an API (Application Programming Interface)
- NLM's Carcinogenic Potency Database transferred to CEBS

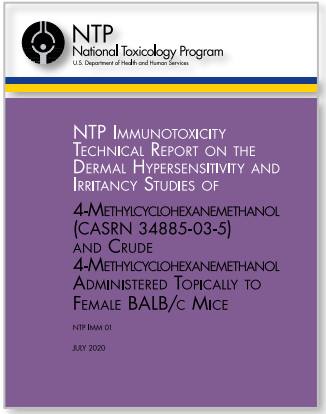
Total Pageviews	Total Downloads
399.2k	ND

Innovation – Products

- Developmental and Reproductive Toxicity Report Series
  - Dimethylaminoethanol bitartrate
  - Vinpocetine
  - 4-Methylcyclohexanemethanol
  - Tris(chloropropyl) phosphate
- Immunotoxicity Report Series
  - 4-Methylcyclohexanemethanol
- Scoping Reviews
  - Neonicotinoid pesticides and human health effects
  - Paraquat dichloride and Parkinson's Disease
  - Prenatal exposure to progestogens







Innovation – Capabilities

- Continuous, home cage behavioral assessments in rodents
  - DNT HEI
  - Collaboration with DIR Neurobiology Laboratory
- Opera Phenix high content imaging
  - NTP Laboratory
- Enhanced digital imaging capability
  - Cellular and Molecular Pathology Branch

Noldus PhenoTyper

Opera Phenix High Content Screening System

Innovation – Partnerships

- Botanical Safety Consortium
  - Instigated by us, supported by the Health and Environmental Sciences Institute (HESI)
  - Co-led by DNTP and FDA
  - Public-private partnership
- Texas A&M Microphysiological Systems Testing Consortium
  - DNTP inaugural member
  - Public-private partnership
  - Collective investment in building confidence in complex in vitro capabilities

DNTP Minority Health Research

- Substance-based hazard characterizations − e.g., hydroxyurea, sulfolane, mold, Kava kava extract, polyaromatic hydrocarbons
- AIDS-related research − developmental and chronic effects of triple combination preventative therapies
- Hypertensive disorders of pregnancy − systematic review of traffic-related, CV Health Effects Innovation focus
- Psychosocial stressors and CV disease
- Personal care products research
- Report on Carcinogens − e.g., *H. pylori*
- Uterine fibroids
- Immune dysregulation in susceptible populations − cf. COVID
- Spatiotemporal Health Analytics − ‘Tox-Risk-Mapping’

Prelude

- Over the next several months, we will be introducing you to a refined and strategic DNTP portfolio
- I hope you will see these things:
  - An interest and recognition of our most contemporary toxicological public health challenges
  - A growing focus on fundamental issues
  - A commitment to progressing our understanding of toxicological mechanisms, advancing our technical capabilities and leveraging existing knowledge
  - A deliberate effort to improve our ability to do ‘predictive toxicology’ and to build confidence in the data supporting those predictions.

Acknowledgements


DNTP

Thank You!

Question 1

The SARS-CoV-2 pandemic has been a stark reminder of significant vulnerabilities in our public health condition. What public health challenges has this pandemic revealed that we should consider within our sphere of influence and capability or how we operate as a scientific organization? More simply, how should the pandemic experience influence the way we think about our mission and operations?

Question 2

A key theme of the NIEHS Strategic Plan is ‘Data to Knowledge to Action’. As a research organization focused on hazard assessment, the ‘actions’ we enable guide toxicology research and inform decisions by others including individuals and policy makers. We have shared with you our productivity over the past year and some outcomes of our work. We are interested in our work being effective and having impact. What other types of DNTP activities and products should we consider? How might they differ from the perspective of various stakeholders (decision makers, concerned citizens, scientific community)?