MSIAC
Munitions Safety Information Analysis Center

Supporting Munitions Safety

MSIAC Highlights and Future Priorities

Insensitive Munitions & Energetic Materials Technology Symposium
18th – 20th October 2022 - Indianapolis, IN, USA

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on behalf of Chuck Denham
(MSIAC Project Manager)

History

History of MSIAC is linked to history of Insensitive Munitions (IM)

- Need for IM arose from horrific accidents of 1960 and 1970s

History

HORRIFIC MUNITION ACCIDENTS
NATIONS RECOGNIZE NEED TO REDUCE DANGER TO OUR OWN FORCES

RFA Bedenham accidental detonation of depth charges 13 killed

1951

1960

USS Forrestal accidental ignition of a Zuni rocket 134 killed, 161 injured

1967

1969

1970

USS Enterprise accidental cook-off of a Zuni rocket 28 killed, 344 injured

1973

Roseville, CA Railyard accidental cook-off of MK-81 bombs 48 injured

1980

USS Nimitz accide
cook-off of Sparrow mis
14 killed, 48 inju

Our Organization

Technical Information Analysis Center Focusing on Munitions Safety

- NATO Project Office
- Independently Funded by its Member Nations (16 currently)

Areas of Expertise:

- Warhead Technology
- Propulsion Technology
- Materials Technology
- Energetic Materials
- Munitions Transport and Storage Safety
- Munitions Systems

Products & Services:

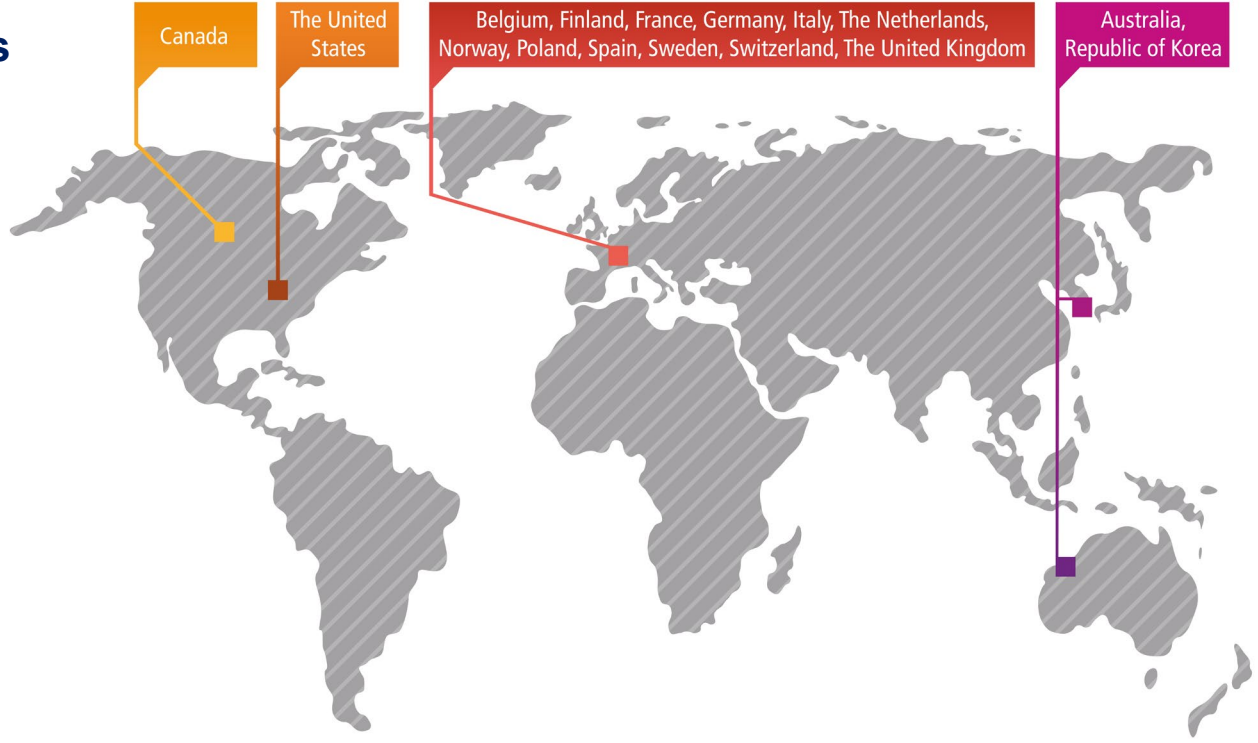
- Technical Questions
- Promotion/participation International Conferences
- Support to NATO WG activities
- Training and Workshops
- Technical Reports
- Repository of Technical Information

Eliminating Safety Risks from Unintended Reactions of Munitions and Energetic Materials throughout their Lifecycle

MSIAC Member Nations

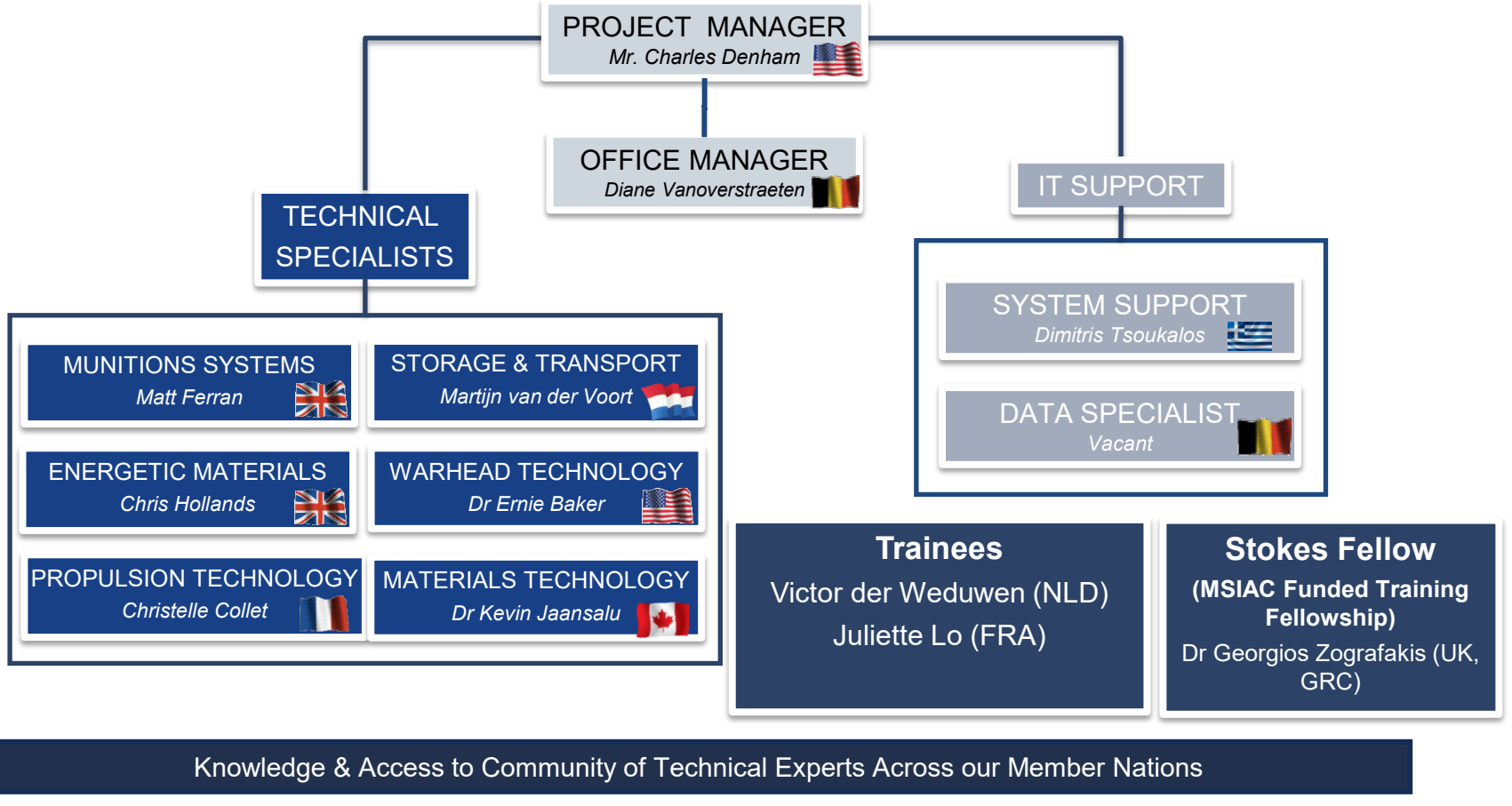
- **MSIAC Strategies, Policies, & Work Efforts Defined by a Steering Committee (SC)**
  - 1 SC Representative per Member Nation, 1 Vote per Member Nation
  - 1 Elected Chairman (non-voting) from a Member Nation

- **16 Members**



Steering Committee & NFPO

MSIAC Staff



Knowledge & Access to Community of Technical Experts Across our Member Nations

Strategic Planning

Strategic Context

Budgetary Constraints
Readiness
Interoperability
Smart Defense

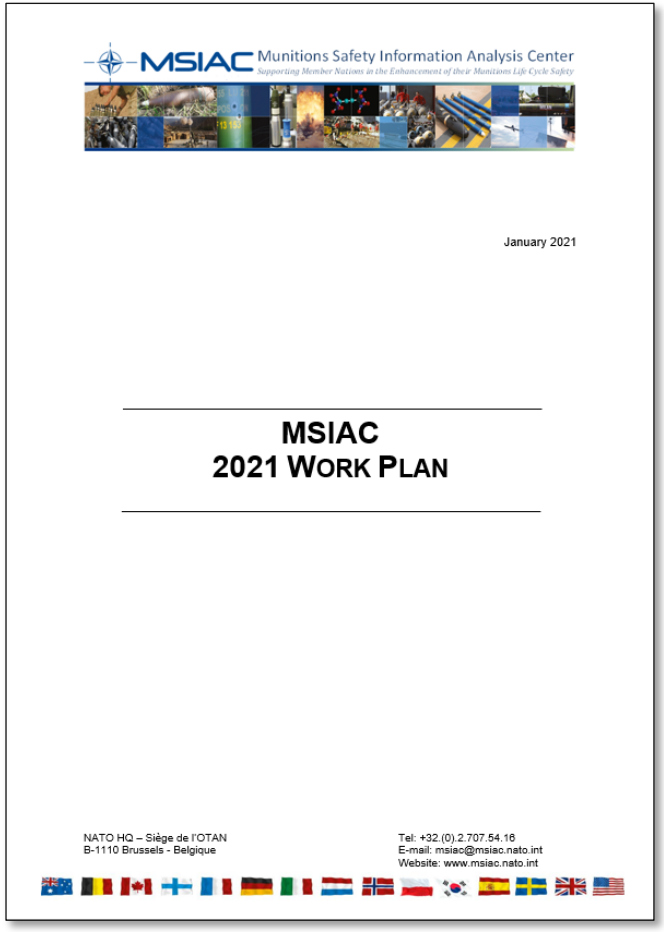
Strategic Drivers

Competing Operational and Safety Requirements
Increased Demand for Accurate and Flexible Munition Risk Assessment
Downward Trend in Energetic Materials Munitions Technical Expertise
Increased Cost and Complexity of Munitions
Increased Exposure of Munitions to Challenging Environmental Conditions

Strategic Planning

Work Elements

Products and Services for the Technical Community


MSIAC Munitions Safety Information Analysis Center
Supporting Member Nations in the Enhancement of their Munitions Life Cycle Safety

January 2021

MSIAC
2021 WORK PLAN

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Highlights

- After the Covid period (2020 – 2021), MSIAC has been busy catching up with the munitions safety community:
  - We organised 7 in-person country visits: UK, Canada, USA, France, Poland, Norway and Australia
  - We attended and/or contributed to 10 international conferences and meetings: UK MESF, Fulmination, IMEMG IM Day, APTS, Workshop on Pyrotechnic Combustion Mechanisms, ICT, International Armament Conference, IMEMTS, PARARI
  - We organised 4 in-person sessions of our now well-known AASTP-1/5 courses, in Wroclaw, Versailles, UK and Belgium
  - We supervised 2 student interns and 1 Stokes Fellow
  - We organised 4 technical meetings on issues with HD 1.3, HERO, and EM Qualification (x 2)


Country Visit in Canada

IPSUSA – Colorado Springs, USA – July 2022


AASTP-1/5 in Wroclaw

Highlights (cont'd)

- We continued to support the NATO CASG AC/326 main group and subgroup meetings
- We received 50 technical questions (as of Sep 2022) … but only answered to 33, apologies…
- And in the mean time, we managed to publish 5 new MSIAC limited reports on the following topics:
  - L-285 - MSIAC Technical Questions Annual Summary Report 2021
  - L-284 - Critical Diameter and Shaped Charge Jet Impact
  - L-283 - Recent Vulnerability Events due to Non-IM Munitions
  - L-281 - Lifing Approaches and Ageing Algorithms
  - L-280 - Mixing Rules for Energetic Materials – Transport Properties

- But we still have a lot to do in the next future to promote insensitive munitions and safer energetic materials, now more than ever!

Future Priorities at MSIAC for 2023 and beyond

- In addition to our routine activities…
  - Country visits, conferences, answer to technical questions, maintaining and populating our tools and databases, support to NATO AC/326 committees,…

- …we will focus on the new following topics:
  - Organization of a workshop on “Mutual Assurance / Recognition and Novel S3 Approaches”
  - Investigation on the use of flow synthesis
  - Review of surrogate materials and their applications
  - Comparison of cost benefit tools
  - Effect of ageing on energetic materials and munitions

Conclusion

- MSIAC continues to provide support on Insensitive Munitions and Munitions Safety
- Policy remains an active area for MSIAC with support provided to AC/326 to facilitate review of munition safety standards
- Workshops and answer to technical questions continue to be of key importance to help advance munitions safety efforts
- MSIAC has an exciting programme of work for 2023 and beyond, and we are looking forward to tackle it!
- For more information, visit our website: www.msiac.nato.int or follow us on LinkedIn: https://www.linkedin.com/company/81572314/