COMAH Control of Major Accident Hazards

COMAH Competent Authorities'

Operational Delivery Guide

Inspection of COMAH Operator Natech and climate change adaptation

For the COMAH Competent Authority Partners:

- The Health and Safety Executive (HSE)
- The Office for Nuclear Regulation (ONR)
- The Environment Agency (EA)
- Corff adnoddau Naturiol Cymru / The Natural Resources Body for Wales (NRW)
- The Scottish Environment Protection Agency / Buidheann Dìon Àrainneachd na h-Alba (SEPA)

Version1 - Intelligence gathering and delivery of initial interventions

Contents

Summary and strategic commitment

1. The COMAH Competent Authorities (CA) recognise that climate change is causing an increasing frequency and severity of natural events that could cause Major Accidents (MAs). Moreover, without appropriate management, the risks and consequences of MAs to both people and the environment could increase. Such events can disrupt critical infrastructure and interrupt business continuity. The CA will prioritise its resources, to carry out a programme of interventions, to verify that each operator can demonstrate appropriate measures have been taken, to prevent and mitigate MAs with natural causes (commonly referred to as Natural hazard triggered technological accidents – Natechs).

2. This Delivery Guide (DG) seeks to coordinate work of the CA, to ensure a prioritised and consistent approach to planned regulatory activity, to ensure an operator takes all necessary measures in a timely manner regarding Natech risks and the need for climate change adaptation to manage potentially increasing risks – with a management system focus.

3. The DG is supported by the CDOIF Guideline - Adapting to climate change. It establishes a clear framework for the inspection at COMAH establishments of Natech identification and assessment of MA potential. It also guides interventions focused on Natech preparedness and adaptation planning for establishments where a Natech event has been identified as a risk with the potential to initiate or aggravate a MA.

4. This DG applies to all COMAH establishments in relation to identification of Natech that could impact the establishment and the assessment of MA potential. In addition, it applies to COMAH establishments that have been assessed as either being directly at risk of a Natech event or where the effects of such an event outwith the establishment may aggravate the response to a MA on site or challenge layers of protection.

5. This DG ensures the requirements of Regulation 25 of the COMAH 2015 Regulations (Inspections and Investigations) are delivered adequately and consistently by the CA. CA inspectors should use this guidance to verify that a COMAH operator has identified and characterised the Natech risk to the establishment (both direct and indirect, and current and in the future), and developed plans for timely implementation of all appropriate risk reduction measures, so far as reasonably practicable (SFAIRP). This

may involve multi-disciplinary inspection by the CA to establish the effectiveness of measures in place and assess the challenges to applicable existing layers of protection.

6. In the early stages (currently the main focus of this version 1 of the DG), the environmental agencies will lead work and take an informing and enabling approach involving all COMAH establishments, focused around:

   - completion of initial data collection from each establishment using the Natech and adaptation questionnaire, and discussion of this information (underway in 2024 and to be repeated at suitable intervals); and

   - a subsequent initial intervention to explore the extent to which management of Natech and climate change adaptation is embedded into an operator's management systems.

7. During the early phase there is also a need to ensure the CA holds sufficient intelligence about each establishment, to guide future intervention planning (ie, inspection teams will need to be able to identify key Natech scenarios for each establishment so that work can be prioritised and targeted in future). This information should be readily available within the operators' major hazard management system (MHMS) risk assessments and should be summarised within CA establishment records.

8. The amount of follow-up work in future interventions will be proportionate to the magnitude of risks posed by MAHs, to both people and the environment, and the performance of the operator with regards proactively managing Natechs within the MHMS, as evaluated through the COMAH Intervention Resource Plan (CIRP) process.

Introduction

9. It has long been recognised that Natural Causes / External Hazards can trigger and/or exacerbate MAs. Natech can initiate and/or escalate loss of control, challenge safety barriers and lead to serious danger to people and/or the environment. The COMAH regulations require consideration and planning for these within the preparedness framework. Increasingly it is also recognised that natural causes for MAs are now influenced by climate change, and without adequate management, some MA risks are foreseen to increase as extreme weather and other climate impacts increase in frequency and severity, including MA scenarios that it may previously have been appropriate to dismiss as unlikely to occur.

10. In GB, the CA and CSF agreed to prioritise Natech and adaptation interventions within wider CA regulatory work. To enable this work, CDOIF developed the CDOIF Guideline - Adapting to climate change and supporting slides, which include the links to process safety and the key concepts relating to minimising the risks from Natech.

11. This DG has been prepared to support planning and undertaking regulatory activities, and to aid decisions on operator performance, linked to measures available for prevention and mitigation of Natechs. It builds on the existing Flood Preparedness DG (COMAH Delivery Guide Inspection of Operator Flood Preparedness), and will eventually incorporate key aspects of that DG, thus replacing the existing Flood Preparedness DG. Work under the flood DG may continue if required in 2025/26.

12. It provides guidance for intervention planning and delivery of regulatory activity under three categories:

    (a) New establishments – Natech and adaptation interventions (in depth inspections for sites identified as at risk from Natech/climate change impacts to explore all aspects of control of Natech MAHs);

    (b) Existing establishments – initial Natech and adaptation intervention (benchmarking, Natech ID, and raising awareness of the need to embed adaptation into the MHMS);

    (c) Existing establishments – continuing Natech and adaptation interventions (in depth inspections for sites identified as at risk from Natech/climate change impacts to explore all aspects of control of Natech MAHs).

13. It is intended that this version of the DG will be updated to include further advice on AMN assessment in relation to operators' adaptation plans and the implementation thereof, and to include any new knowledge developments as good and best practice evolves.

Purpose

14. To ensure each operator (and holders of codes / standards) understands and acts upon the CA position for Natechs and climate change adaptation, which says:

    The CA expects operators to:

- *assess how Major Accident risks associated with extreme weather events and other climate change impacts will vary over the lifetime of their establishment; and*
- *plan how to respond to these changes, and implement modifications at an appropriate time, to manage both present and longer-term risk to ALARP levels.*

15. To ensure CA regulatory staff understand what to look for as indicators that an operator has appropriately assessed MAH risks, identified necessary control measures, developed suitable improvement plans, and implemented these in a timely manner, ie, the operator has embedded climate risk management throughout their MHMS, SFAIRP.

16. This DG provides a consistent framework and information to support regulators' inspections of controls on Major Accident Hazard (MAH) safety, associated with Natechs, especially where these are new MAHs due to, or further compounded by, the impacts of climate change. It is necessary to recognise that present day Natech risks may have increased since the establishment was designed, and moreover, risks could continue to increase throughout the lifetime of the establishment. This DG supports the CA programme of inspections, to ensure an operator's management systems incorporate relevant good practice for Natech management and climate change adaptation approaches. This will subsequently ensure each operator takes appropriate Natech and climate change adaptation measures to prevent and mitigate MAs.

17. The approach the CA has agreed to take will:

    (a) Start with an informing and enabling approach (building on the work associated with the 2023/24 operator questionnaire and CDOIF material) to enable field teams to:

        i) influence new entrants, or those making significant changes, to ensure climate resilience is integral to all business decisions relevant the process safety of new/modified installations throughout the lifetime of the establishment;

        ii) support existing operators to understand best practices and benchmark to create an improvement plan for each establishment;

    (b) A subsequent deeper look at risk reduction measures and ensuring legal compliance whilst also improving our regulatory approaches based on learning from initial interventions.

Scope for operator interventions

18. This work applies to all UT and LT COMAH establishments.

19. This DG does not prescribe a sufficient minimum level of intervention time / resource / frequency for given establishments. The amount and depth of work should be proportionate to the site hazard and the extent to which Natechs are relevant to the establishment MAH scenarios – and this may change over time as the risks are better understood, or the rate of change to the climate alters. However, it is expected most / all establishments will be affected by climate change impacts and thus all establishments will require some degree of intervention (both intervention by CA regulatory activity and/or adaptation modifications to the establishment infrastructure or systems). As with all interventions, CCA interventions may be undertaken alongside other MAH interventions, where appropriate, and should be planned in accordance with the CA intervention planning procedure.

20. At present it is anticipated that, since a lot of the climate adaptation good practice is relatively new, there will be little evidence available to consider operator performance aspects. Thus, proportionate planning will presently be weighted towards consideration of MAHS and the extent to which Natechs, and climate impacts can influence them. As we progress and as other evidence becomes available (eg, third-party management system audit reports) then greater weight may be given to operator performance when planning future interventions.

21. COMAH requires an operator to identify possible major accident scenarios that are caused by natural events, the probability or the conditions under which they might occur, and assess the extent and severity of the consequences, and to implement the measures necessary to prevent and limit their consequences for human health and the environment of such major accidents (Regulation 5 and Schedule 3 paragraph 5(a)(iii)). However, good and best practice for embedding climate change management is relatively new and continues to evolve. Officers and inspectors should be mindful that an operator may need support to demonstrate compliance with existing obligations for Natech, and to raise awareness of that obligation extending to the evolving risks resulting from climate change. There are a number of stages to the operator's development and maintenance of a climate change resilient establishment, and CA assurance of the stages to achieving this ongoing resilience may take several years.

22. Many operators may be in the early stages of MA scenario identification for emerging risks due to the changing climate. Moreover, more complex sites may still be working to establish present day baselines (considering change in risk from site construction to present day) and may still be working to complete this in depth and only just moving to incorporate future risk assessments. The reasonable timescale for completion of this work will become clearer as CA inspections progress and the sector moves forward.

23. The methodology an operator uses for identifying these new or changing risks should be the same as for all other MAH scenarios, but incorporating additional sources of information and guidance (eg climate information such as UK Climate Projections (UKCP) - Met Office and future flood data or adaptation management approaches including ISO 14090/91 and the adaptation pathways approach in BS 8631).

24. Once climate relevant MAHs have been identified, assessment of the risk to people and the environment will require the same methodologies as for all other MAH scenario assessment (eg, the CDOIF guideline for human harm that is in preparation, and for environmental consequences CDOIF guideline environmental risk tolerability, which is being reviewed by CDOIF).

25. With the risks assessed, the operator should develop a plan detailing how each of these risks will be managed and integrate monitoring and evaluation of plan delivery (including KPIs) into their management systems. The development of an adaptation plan needs to recognise that the identification of MAH and risk assessment relating to Natech will need to be regularly reviewed, particularly if the rate of climate change is more rapid or slower than incorporated into the plan or as it becomes apparent that new Natech risks are applicable to the establishment (and the operator should have a procedure to ensure such regular reviews occur), and the adaptation plan amended accordingly. In addition, the adaptation plan for each establishment will not be implemented in full immediately after it is developed, it may contain establishment modifications that it is anticipated will not be required for many years.

26. The operator should demonstrate that an adaptation plan exists, the plan is implemented in a timely manner to demonstrate the establishment employs all measures necessary (and the timing of implementation may need to be revised if the rate of change alters), and that appropriate systems are in place to undertake regular reviews of the plan and its supporting assessments.

27. Interventions will explore the extent to which the operator has taken the necessary measures associated with preventing and mitigating MAs from natural causes and to manage climate change impacts as relevant to the establishment MAHs, including any wider impacts on MA response due to climate change impacts (eg, accident occurring during extreme weather event).

28. The interventions will also include a look at Senior Management "climate adaptation and climate resilience leadership" since senior management commitment is essential to enabling adaptation action.

29. The focus is on the management system(s) (corporate policy, organisation and personnel, risk assessment, and emergency response, in particular, as these enable subsequent MAH focused improvements across management systems). Subsequently the design, build, operation and maintenance of all measures associated with MAHs. There is also some linkage to safety reports and their examination.

30. For limited lifetime establishments (due to cease operation in next 5 years), the focus should be limited to ensuring adequate assessment and control of present day Natech risks. Note however, the CA may require verification by the operator that the establishment or installation will cease operation. In the case of an incident occurring after a confirmed cessation date, the CA will include consideration of this fact as an aggravating factor in any enforcement decisions taken.

31. For new establishments or those making significant modifications, CA should seek immediate adoption of good practice and where necessary best practice before construction / operation of the establishment.

Actions

Officer and inspector competency

32. Compliance decisions within the COMAH regime require a sound knowledge of the COMAH regulations, their risk-based approach, and associated measures for prevention and mitigation of MAs. Moreover, inspection teams need to make decisions collectively within the CA enforcement frameworks (see also **Judging success and moving on – performance scoring**).

33. Officers and inspectors should be familiar with Natech and climate change adaptation good and best practice and have received COMAH relevant L&D (see Annex 6 for further details).

Interventions for new establishments or those where significant modifications occur

34. The characteristics of interventions associated with new or significantly modified establishments are as follows. The environmental regulator officer will assist the CIM (where HSE CIM), and if applicable the safety report assessment manager, to:

(a) Review the Operator's approach to identification and evaluation of the risk Natech and climate change may pose at the establishment (i.e. the threat to managing MAHs safely), both currently and in the future.

(b) Ensure Natech and climate change adaptation matters are appropriately considered and included within the MHMS, and any pre-construction / pre-operation Safety Report, through advice and guidance.

i) Highlight CA position to a new entrant or existing establishment operator, that is, the CA expects an operator to:

- assess how MA risks associated with extreme weather events and other climate change impacts will vary over the lifetime of their establishment; and
- plan how to respond to these changes, and implement modifications at an appropriate time, to manage both present and longer-term risk to ALARP levels;

ii) For new establishments this includes consideration of the full establishment lifecycle at the initial siting and design stage, and for both new and modifications to existing establishments the importance to incorporate flexibility in the design to be ready to accommodate foreseeably required future modifications (ie, avoiding lock-in);

iii) Highlight key Natech and adaptation guidance and info (ISO 14090/91, UKCP18 etc);

iv) Highlight CDOIF guidelines and the need to embed climate change adaptation thinking into management systems and all establishment design, construction, operation and maintenance considerations.

(c) Ensure relevant good, and where appropriate, best practice is incorporated throughout the establishment lifecycle prior to construction or operation, to ensure resilience in terms of future climate projections is embedded into design, construction, operation, and maintenance decisions to maintain risks ALARP throughout the establishment lifetime.

Existing establishments initial Natech and adaptation interventions

35. Where an establishment also has an environmental permit, then the interventions using this DG should be co-ordinated with permit compliance activity (eg, carried out jointly with an inspection using the EPR Adaptation Audit tool in England).

36. For operators of multiple establishments, initially adopting a corporate management systems approach will be more efficient, with co-ordination between officers to deliver a single focused inspection of corporate management system and leadership aspects, to be followed at a later date by establishment specific interventions (similar to the lead unit approach).

37. The characteristics of interventions associated with initial interventions at existing establishments are as follows. The environmental regulator Officer, in consultation with HSE on specific concerns on safety of people, will:

(a) Explore and benchmark the extent of embedding Natech and adaptation matters across management systems.

(b) Schedule interventions to align with the corporate policy/ambition and any operational delivery KPIs as set out in the corporate strategies of each CA organisation.

(c) Build on existing understanding of operator performance (eg, as contained in the Natech and adaptation questionnaire reply, or any risk assessment already done for COMAH/environmental permitting).

(d) Where appropriate, plan a Natech focused intervention:

i) This initial work is intended to be a high-level management system health check regarding Natech and climate change impacts, to provide an initial benchmark and thus inform a supportive dialogue with the operator to

establish CA expectations and help identify early actions to aid continual improvement of MAH management;

ii) The work should not repeat any previous CA regulatory work but should build upon it. In planning this intervention any existing information the CA holds relevant to Natechs should be considered (for example, questionnaire responses), including any Natech relevant environmental permitting and management system work under EPR/PPC, or previous flood assessment work under the Flood Preparedness DG. However, the CA may not have had conversations previously about climate change impacts specifically and the need to take an adaptive management / adaption pathways approach to manage risks to ALARP over the lifetime of the establishment;

iii) The work should be prioritised and co-ordinated in the context of overall strategy for the sector and relevant internal strategies (regulatory strategies, regulator KPIs etc);

iv) This work should focus on ensuring the operator identifies key Natechs (MAHs with natural causes), understands climate change impacts affecting these, and for CA to signpost best practice regarding embedding of Natech and climate change adaptation into management systems (including the role of top management to provide climate leadership);

v) See ***Suggested question set & typical documents to be requested prior to the inspection*** and Annex 1 for key COMAH requirements and sample questions/ expectations to support intervention planning, including a list of typical documents to be requested prior to the inspection;

vi) For establishments the CA prioritised as Hazard Band A/B for either safety of people or the environment, the intervention will typically involve an estimated 3 days (note this is an average, some sites may take less, some more, especially if more than 1 officer is involved, as might be required for larger / more complex sites), this includes:

- 1 day prep (including request for, and initial review of, relevant SMS documentation the CA does not already have - see ***Suggested question set & typical documents to be requested prior to the inspection***);
- 1 day inspection (possibly staggered over time, could be remote intervention and could be delivered once across multi-site operators with common MHMS);
- 1 day write-up;

vii) Proportionately less time will be required for establishments due to cease operation in next 5 years, or for inherently lower hazard sites, for example, establishments that are Band C for both safety of people of the environment (1 day total time), and similarly, Band D (0.5 days total time), and for these, potentially all remote intervention gathering information by email based on the guidance in ***Suggested question set & typical documents to be requested prior to the inspection*** (environmental regulator staff should lead this work initially, even at sites with no MATTE due to Natech/climate change impacts expertise).

(e) Where appropriate, the Natech and climate change risk assessments should be dovetailed with any ongoing assessment to identify the MAH and subsequent risk analysis and evaluation (risks to people and/or environment).

(f) Update CA records based on this intelligence to inform future Natech regulatory work.

(g) Tailor the scope for safety and/or environment Hazard Band A/B establishments for each establishment depending on current intelligence of the CA for that establishment. For establishments that are Hazard Band C/D for both people safety and the environment, a lighter touch approach is appropriate. By sampling from the MHMS, in particular the aspects highlighted in Annex 1, explore the extent to which current procedures / records etc incorporate:

i) Assessment of risks from natural causes (Natech identification, analysis and evaluation) based on present day extreme weather and climate relevant information (which can include information associated with Natechs that have already occurred) to establish and assess a representative set of Natech scenarios for the establishment and their impacts, in particular any with potential off-site impacts to people or the environment (to inform emergency planning);

ii) Learning from past Natech incidents relevant to the establishment (including sources of information on these) and how decisions to consider and implement relevant lessons were made at the establishment. Are any historic Natechs not captured/represented by company risk assessments?

iii) Emergency planning ensuring:

- identification of foreseeable emergencies, in particular, MAH scenarios that can be caused or exacerbated by natural causes, and that these are consistent with risk assessment outputs;
- the specific implications of the natural causes for the establishment have been determined through systematic analysis;
- the preparation, testing and review of emergency plans have been i) developed, and ii) tested based on a Natech scenario;
- emergency plans include wide area impacts typical of Natech, such as availability of responders or wide area power and comms loss and alternate arrangements to ensure resilience of emergency plans in such circumstances;

iv) Exploration of:

- creeping change regarding climate impacts:
  - how do procedures ensure new knowledge of climate change impacts linked to natural causes/Natechs trigger review/revision of risk assessments?
  - do procedures capture change in receptor vulnerability due to climate impacts? (eg, the same accident could have greater consequences for a more highly stressed receptor – as might occur due to global warming);
  - appropriate development and assessment of maintenance and engineering standards;
- rate of change of risk (eg, sensitivity analysis – how have MAH risks at the establishment changed comparing past natural event that could lead to a MA and the frequency/severity of present-day natural events); and
- risk attribution, ensuring identification of any dominant risks from specific Natech events / plant areas where Natech risk is greatest or changing more rapidly?

v) Links from assessment of Natech risks to tolerability criteria (people and environment) and thus decision making on risk acceptance/tolerability ALARP demonstration;

vi) Inclusion of future scenarios from differing climate projections and identify best sources of climate relevant information (currently UKCP18);

vii) ALARP justifications/decisions include thinking about future risks, whether further risk reduction will be required at some time in the future and an understanding of when important risk reduction decisions may be required.

(h) Explore how COMAH SMS may overlap with other areas of the business (planning, permitting, financial disclosure), and whether the relevant personnel are organised to collaborate to avoid duplications and maximise organisational capabilities (adaptive capacity).

(i) Explore senior management understanding of the establishment key climate related risks in terms of Natural causes.

i) Are top managers aware of their climate leadership role?
ii) Is top management aware of the Natech relevant MAHs for the establishment, how they might change with climate change impacts and indeed what the company may be overlooking?
iii) How does this relate to future strategy including eg, net zero developments?
iv) Does the company have an overarching policy on adaptation (maybe linked to resilient Net Zero)?

38. The following should be highlighted to the operator, and will be the subject of future interventions and SR examination work.

(a) Highlight CA expectation regarding adaptive management, that is, the CA expects operators to:

i) assess how MA risks associated with extreme weather events and other climate change impacts will vary over the lifetime of their establishment; and
ii) plan how to respond to these changes, and implement modifications at an appropriate time, to manage both present and longer-term risk to ALARP levels.

(b) Highlight CDOIF guidance, which links to best practice for climate change adaptation (ISO14090/91, BS 8631) and information sources and case study material, including the need to:

i) establish climate adaptation leadership;
ii) “stress test” the establishment from a MA perspective for 2□C and 4□C scenarios (ie, the initial MAH screening to identify scenarios that require greater depth of assessment and risk management); and

iii) embed adaptive management throughout the MHMS, including active monitoring and the recommend adaptation pathways approach to management of uncertainty.

(c) Highlight that whilst the focus of intervention work is on the company MHMS, the Safety Report and information feeding into emergency planning is required to be kept up to date.

Existing establishment continuing Natech and adaptation interventions

39. After the initial inspections for this topic (***Existing establishments initial Natech and adaptation interventions***), the CA may choose to prioritise further in-depth interventions at some establishments (determined by CIRP)

40. In depth inspections to sample aspects of control of Natech MAHs for sites identified as at risk from Natech/climate change impacts, and as previously, potentially needs to dovetail with other work (eg, MAHIRA). The environmental regulator (in consultation with HSE on specific concerns on safety of people), will:

(a) Use intelligence to target plant areas at greatest risk (either due to increasing frequency / severity of threats or due to scale and nature of potential consequences of Natech).

(b) Prioritise / carry out more depth of work for establishments and scenarios with potential off-site impacts.

(c) Consider Natech scenarios / case studies to support sample point selection (link to geographical location, nature of the establishment and existing scenarios – see Annex 2 for specialist discipline links):
   i) inspection based around one or two Natech scenarios - Agency Officer led;
   ii) where high risk Natech scenarios relate to people safety outcomes, discuss with HSE to decide upon prioritisation within the site inspection strategy, and where these relate to technical specialist areas, the HSE inspector will raise this with the relevant discipline.

(d) Inspect to explore whether the aspects of the management system ensure the operator:

i) assesses how MA risks associated with extreme weather events and other climate change impacts will vary over the lifetime of the establishment;
ii) plans how to respond to these changes, and implement modifications at an appropriate time, to manage both present and longer-term risk to ALARP levels; and
iii) includes wider climate in leadership, MHMS and emergency arrangements.

(e) Consider, for UT sites, whether:
i) the SR has been maintained to be representative of the conditions at the establishment, based on current information (including present day and future predicted climate change impacts);
ii) new information has resulted in appropriate revisions; and
iii) the new information and revisions have been passed to emergency planners, where necessary.

Suggested question set & typical documents to be requested prior to the inspection

41. Suggested documents to be requested prior to the inspection:

(a) MAPP or similar corporate policy which demonstrates commitment to embed adaptation to climate change into management systems (either explicitly or implicitly by committing to continual improvement and consideration of changing knowledge of MAHs, good and best practice).

(b) Management system documents that detail management roles and responsibilities for Natech & climate risk management (organisation and personnel).

(c) Major Hazard identification and evaluation procedure (as relevant to Natechs and climate change) – to include any outcome from the risk assessment process which details risks associated with identified Natechs.

(d) Major Hazard improvement plan (as relevant to Natech / CCA improvement plan).

(e) Emergency plan (as relevant to extreme weather preparedness and response) and details of any learning from previous extreme weather emergency exercises relevant to the MHMS.

42. Suggested minimum question set, which may be the only information requested at lower hazard establishments during 2025/2026:

    (a) Please explain how your management system, as a whole, ensures you continue to take All Measures Necessary to prevent and mitigate Natechs, including in a changing climate [COMAH, Reg 5].

    (b) Please explain how you are reviewing / revising your MAPP & MHMS (+ EMS), in light of recent advances in good and best practice associated with increasing climate impacts (including January 2024 CDOIF guidance and the 2024 ISO amendments) [COMAH Reg 7 & Sch 2 (1&2a)].

    (c) Please provide specific information on Governance and Top Management commitment to make the necessary changes to embed adaptation into your management systems (this should include commitment to organisation and personnel issues to ensure sufficient adaptive capacity) [Reg 7 & Sch 2 (1&2a)].

    (d) Please provide an explanation of how your Major Accident Hazard identification, analysis and evaluation procedure deals with natural hazards and the impacts of climate change associated with these (this discussion should focus on the management system procedure, not safety report) [Reg 7 & Sch 2(2b)].

    (e) Please provide details for the last Major Accident emergency plan test/exercise you carried out around a Natech scenario, and the lessons you learned, and plans you have for future Natech exercises (this could be linked to extreme weather plans, but must have MHMS focus) [Reg 7 & Sch 2(2e)].

Judging success and moving on – performance scoring

43. Success criteria for Natech and climate change risk assessment inspections are defined in Annexes 1 (linked to regulations), 4 (linked to disciplines), and 5 (linked Natech threat types - Annexes 4a to 4g). By comparing key findings from the inspection with the relevant success criteria the COMAH operator's performance should be rated in line with the descriptions/scores provided in Annex 2.

44. An operator should be advised of its establishment performance scores, which will also be recorded on future intervention plans. The CIM and Inspector/Officer should be

prepared to discuss these with the operator to ensure there is clarity regarding how the score was derived and any remedial actions identified.

45. The CA will derive 2 scores for performance in compliance with this DG:

    (a) Score 1 – Present Natech risk management; and
    (b) Score 2 - Future Natech risk management.

    See expectations in Annex 1 and Performance Scores in Annex 2.

46. The first score relates to the operator's management of the present-day risk from Natech. The expectation is that an operator has identified the MAHS relating to Natech (in the same way as all MAHs should be identified), has assessed the risk associated with those scenarios, and can demonstrate that AMN have been taken to prevent major accidents and to limit their consequences for human health and the environment. This should include recognition that the climate has already changed, and present-day natural causes may be more frequent and/or more severe than considered when the establishment was designed.

47. The second score relates to the management of future risk, including integration of climate change adaptation into MHMS. In the first years of this DG, the expectation is that an operator has identified the evolving MAHs relating to Natech, has assessed the risk associated with those scenarios (including rate of change of risk over time and understanding of specific parts of the establishment most at risk), and has an adaptation plan to prevent those major accidents and to limit their consequences for human health and the environment, with implementation of the necessary measures at appropriate times.

Enforcement expectations

48. Inspectors and Officers should use the enforcement policies, including assessment of factors that are specific to the COMAH establishment along with wider public interest factors, to inform their regulatory decisions. Indicative enforcement expectations are included in Annex 2, and link to the requirements of COMAH in Annex 1 and relevant good and best practice as outlined throughout this DG.

49. If using EMM to guide enforcement on environment matters, events with MATTE potential should be considered equivalent to “Serious personal injury” in terms of EMM guidance.

50. Inspectors and Officers should be mindful that good and best practice for control of present day Natechs has been established for a longer period of time than that associated with changing impacts due to climate change and associated adaptation risk management approaches. Thus, the CA should weigh enforcement appropriately, considering the status of good practice, it’s date of publication and the reasonable period of time it could be expected to implement changes.

Recording and Reporting

51. When the inspection is complete, performance scores should be communicated to the COMAH operator and recorded in the CA inspection report.

52. Performance scores should be recorded in accordance with records keeping arrangements in place for each CA organisation.

Review and Evaluation of the DG

53. The aim is to review the DG after 12 months to evaluate any evidence for improvement or modification based on feedback from inspections and ongoing development of the strategic topic with industry.

54. The CA will periodically review and evaluate outcomes of work undertaken through this DG and communicate key lessons learned to relevant parties and stakeholders. At the conclusion of the strategic topic a summary of findings will be shared with stakeholders.

Annex 1 – Key requirements of COMAH associated with Natechs

Regulatory requirements – Regulation 7

(2) A major accident prevention policy must—

(a) be designed to ensure a high level of protection of human health and the environment;

(b) be proportionate to the MAHs;

(c) set out the operator's overall aims and principles of action; and

(d) set out the role and responsibility of management, and its commitment towards continuously improving the control of MAHs.

Regulatory requirements – Schedule 2

1. A safety management system must—

(a) be proportionate to the hazards, industrial activities and complexity of the organisation in the establishment;

(b) be based on assessment of the risks;

(c) include within its scope the general management system, including the organisational structure, responsibilities, practices, procedures, processes and resources for determining and implementing the major accident prevention policy.

2. The following matters must be addressed by the safety management system—

(a) in relation to the organisation and personnel—

(i) the roles and responsibilities of personnel involved in the management of major hazards at all levels in the organisation, together with the measures taken to raise awareness of the need for continuous improvement;

(ii) the identification of the training needs of such personnel and the provision of the training;

(iii) the involvement of employees and of subcontracted personnel working in the establishment, who are important from the point of view of safety;

Sample Questions

- For top management

- Explain your corporate policy and strategy for managing the potential increasing environmental and safety risks associated with natural causes of MAs and climate change?
- Do you feel your policy and strategy is adequately explained in your MAPP? Could it be improved? (eg having reflected on evolving best practice, such as the CDOIF climate change adaptation guidelines or ISO 14090 and the 2024 ISO communique, standards and guidance on embedding of climate change issues across all management systems).
- Explain your governance structure associated with MA risk control, using Natechs to illustrate how you have oversight of how climate impacts may be altering your risk profile and how you are planning and delivering actions to maintain control (ie the arrangements for senior/top management direction, decision making, oversight and accountability).
- What are your biggest COMAH relevant climate risks? Is there one climate relevant threat in particular that keeps you awake at night? [note, if the reply relates to net zero/mitigation then follow up Q to ask about Natech/climate impacts on safety and environmental performance]
- What learning and development have you undertaken to enable you to provide direction related to Natech and adaptation risk management?
- How do you remain sighted on whether the risks of Natechs at your establishment(s) remains ALARP?

- For MS as a whole (eg, MS managers)
  - Have specific Natech and adaptation roles and responsibilities been a) identified and b) documented?
  - Using the 2024 ISO amendments in IAF/ISO communique as an example (and any subsequent embedding guidance and standards such as 14002-3 or 45007), explain how your management system identifies new management system requirements and ensures the necessary actions to amend the system and your operations are taken to ensure continual improvement.
  - Have your management systems (any/all) been audited to ascertain level of compliance with the 2024 ISO amendments re climate change? [Seek evidence of both Internal and External audits].
  - What training needs have been identified? Where are the requirements documented? [Sample training records for key personnel, including leadership, top and middle management, specialist roles and the understanding of

standards/codes/guidance and corporate procedures relevant to their work, through to all staff awareness of Natech and climate risks].

- How does your management system ensure adequate understanding of the need for control of Natech and climate change risks, associated with your supply chain? [for example, competence of contractors / consultants, integration of climate resilience throughout an asset / service lifetime through contractual means].

Inspections to sample MS aspects associated with continuous improvement – such as procedure for maintaining knowledge on the science of climate impacts and maintaining understanding of the evolution of requirements of engineering and management system codes/standards – very relevant as they are revised to become future facing.

Expectation / Demonstrations

The organisation should be able to demonstrate it has established and maintained adequate policies, strategies, and governance to manage Natech and adaptation risks, recognising best practices for managing changing risks and uncertainty. CDOIF Natech and adaptation guideline - Leadership section 4.

To ensure continuous improvement (and awareness of the need for it), the operator's management system needs to be sufficient to ensure the operator maintains an awareness of evolving good / best practice and evolving legal / compliance drivers, and has in place processes for determining if those changes are relevant, in particular to COMAH and any actions necessary to maintain risks ALARP. For example:

- The organisation should be broadly familiar with the legislative and political landscape on adaptation (SDGs, TCFD, embedding adaptation across all policy spheres) and can demonstrate they have the organisational structures to avoid siloed working, and share best practice across the company, to manage climate risks in a way that is integral to whole business management.
- The organisation should be aware of recent Joint ISO-IAF Communique on Climate Change considerations to Management System Standards Feb 2024, requiring climate change to be a material consideration with regards delivery of corporate objectives across a wide range of management systems (quality, environment, safety etc) and should have actioned appropriate measures to improve as necessary.

ISO 14090, Clause 5 and all aspects of the standard associated with building organisational adaptative capacity – including:

- 3.2: adaptive capacity [definition] – ability of systems, institutions, humans, and other organisms to adjust to potential damage, to take advantage of opportunities, or to respond to consequences
- 6.3: assessing adaptive capacity
- 7: adaptation planning; including 7.1 General and 7.4.6 Adaptive capacity

Understanding of ongoing work / developments around:

- climate service standardisation UK Climate Resilience Programme Standards and Values;
- the availability of adaptation training, such as IEMA accredited (Climate Sense/JBA) adaptation standards training;
- any adaptation relevant learning (often linked to sustainability - SDG13) from professional bodies; and
- various climate disclosure requirements (such as TCFD).

See also ISO 14001 (and 14002-3 and 45007, both under development in 2024) for policy, organisation, and personnel matters.

Regulatory requirements – Schedule 2

2. The following matters must be addressed by the safety management system –

(b) the identification and evaluation of major hazards: the adoption and implementation of procedures for systematically identifying major hazards arising from normal and abnormal operation, including subcontracted activities where applicable, and the assessment of their likelihood and severity;

Sample Questions

- Show your management system procedure for the identification and evaluation of major hazards [N.B. this could be included in a pre-inspection information request].
- Explain how your procedure controls the identification and evaluation of Natechs. How do you decide whether a climate impact is relevant to safety and environmental protection at the establishment?
- Explain how your procedure enables identification and learning from any site-specific, national or international accidents with Natech relevance that have previously occurred.
- Explain how potential change in MAH risk, due to climate change, is managed in your risk assessment process.

- Explain how your risk assessment analyses sensitivity of risks to the rate of change of climate impacts and how this then informs the degree of urgency associated with risk management decisions (how long can decision-making be delayed?).
- What are the future climate scenarios you use to assess climate risks, and what climate information do you use?
- Do you use national or local climate information?
- Describe the key climate impacts relevant to your establishment.
- Describe the key locations/activities at your establishment that are especially vulnerable to climate impacts.
- Describe how you incorporate changing receptor vulnerability into your risk assessment process (e.g. declining species populations with regards MATTE risk assessments)
- What are the MAH scenarios you have identified with natural causes?
- Are there any MA scenarios that are not credible today, but might become credible over the lifetime of the establishment? (for example, due to rising sea level or increasing maximum ambient temperatures or more vulnerable receptors)
- Explain how you have built organisational adaptive capacity (including leadership commitment, resources, defined roles and responsibilities and training needs) to enable you to assess Natech risk? Have you got any outstanding capacity building (training/resources etc) required to better understand the relevance of climate impacts to management of safety and environmental protection at the establishment?

Expectations/demonstrations

The CA expects an operator to assess how MA risks associated with extreme weather events and other climate change impacts will vary over the lifetime of their establishment.

The CA expects that this will include consideration of any change in frequency and intensity of climate impacts (natural causes) that has already occurred or will occur in the future and an evaluation of the implications of this for Major Accident risks. However, the CA recognises that there is a greater deal of uncertainty associated with modelling climate impacts, compared to traditional process safety risk assessments, and thus assessment of future risk will more likely be a qualitative exploration of change in likelihood and severity under differing climate scenarios, as opposed to full QRA. Risk assessments can be further refined over time as necessary (adaptation pathway approach – ISO 14090/BS 8631) and where risk data is currently not available it is acceptable for an operator to include an improvement action

associated with gathering or generating further information – however that should not become an indefinite / long-term delay in decision making.

The CA also recognises that in assessing risks and prioritising risk reduction action it is necessary to consider the rate of change of risks in the context of the timescale required for implementing possible risks reduction measures. Many organisations now consider this in terms of an "Urgency" score within their risk assessment process. Thus, risk assessments need to explore the sensitivity of MA risk to changing climate impacts and the rate of change associated with this, to inform the urgency for improvement decisions to be made.

Source: Natech Risk Management common inspection criteria (JRC 2020).

Assessment of natural hazards in the area of the establishment – It is important that the operator has identified the types of natural hazard that have the potential to trigger an accident. For each, the operator should describe at least one natural-hazard scenario. Whenever available, the operator should use location-specific data for the description of the intensity parameters of the natural hazards. This allows the identification of the **exposed facilities** in the establishment and the effects of the natural hazard on the establishment's surroundings. Some natural-hazard scenarios may be a "common cause" phenomenon, that is, the event does not affect just one part of the site, but several facilities at once (or even all of them), although some parts may be more vulnerable. The operator may use different criteria for the identification of the natural-hazard scenarios (most likely, worst case, etc.), provided that this choice can be reasonably justified. For each scenario, the natural-hazard description should adhere to the following principles:

- The **type and main characteristics** of the natural hazard should be indicated.
- The person, or agency, carrying out the assessment of the natural hazards at the industrial site should have the appropriate **expert knowledge and competence**.
- The source documentation should be readily available.
- The natural-hazard description should be **based on reliable and trusted sources**. The preferred sources of information are generally government authorities, for example civil protection, at the national or local level.
- A list of the **facilities exposed** to the natural hazard should be indicated.
- Natural-hazard scenarios should be **detailed and complete** and should be described according to best practices.
- The level of detail of the natural-hazard information should be **adequate for the analysis of risks of MAs**.

- The information should be useful to assess the potential damage to industrial equipment and/or utility disruption (ie, potential **accident initiators**).
- The information should include past natural hazard events that **occurred at the site**.
- The natural-hazard information **should be recent** (up to date).
- The natural-hazard information should take into consideration the increasing frequency and intensity of some natural hazards due to **climate change**.

Source: CDOIF Guideline - Adapting to climate change.

Best practice guiding the procedure for risk assessment of climate impacts includes the need for the following actions to be embedded in risk assessment procedures. It should be noted that these actions are based on existing guidance for EPR and COMAH establishments.

- Firstly, the present day Natech hazards and other climate impacts, based on the current frequency and severity of natural causes, should be identified, assessed, and understood (eg, in terms of implication for safety and environmental protection). In this context, to create a good baseline, the identification of present-day impacts and any changes since the original business/establishment design assumptions are needed. The climate has already changed and may already be causing increased risk.
- Secondly, a criterion is required for the assessment of future risks under climate change. This comprises two elements:
  (a) Procedures may include the limiting condition that where the remaining lifetime of the installation is short (for example, less than 5 years), the operator can choose to only consider present-day threats and would not need to assess future changes.
  (b) For those establishments with a longer lifetime, (especially those which will foreseeably be in operation greater than 10 years), the following should be considered, in order to gain insight into the climate impacts that might arise given different possible levels of global warming:
    i) For initial screening to identify relevant MAHs (See Section 7 of the CDOIF guideline) a worst-case scenario based on a trajectory to +4°C mean global temperature rise should be used.
    ii) The scenarios identified in the initial screening (Section 7, CDOIF guideline) are carried forward into a risk assessment (Section 8 and Section 9, CDOIF guideline). These should then be further assessed under at least three different climate scenarios. These scenarios are as follows:
      - present day
      - on a trajectory to +2°C by 2050 scenario

- on a trajectory to +4°C by 2100 scenario

It is important to recognise that the scenarios +2°C and +4°C refer to levels of mean global warming above a pre-industrial baseline. The local or regional impacts including changes to local temperature, precipitation, storminess, sea level rise need to be understood, and the temperature rise at the location could be greater than +2°C etc. Practitioners' understanding of the impacts should be based on information from modelling of Met Office climate data such as UKCP18.

More information on sources of climate impacts information and how to assess climate risks can be found in the CDOIF guideline. For example, section 5.1 includes guidance on matters such as: Best practice – ISO 14091, Risk assessment review and revision criteria and risk tolerability.

Regulatory requirements – Schedule 2

2. The following matters must be addressed by the safety management system—

(e) in relation to planning for emergencies—

(i) the adoption and implementation of procedures to identify foreseeable emergencies by systematic analysis;

(ii) the preparation, testing and review of emergency plans to respond to emergencies and the provision of specific training for staff, such training to be given to all personnel working in the establishment, including relevant subcontracted personnel;

Sample Questions

- Show your management system procedure for emergency response, in particular responding to natural causes of MAs (extreme weather emergency plans for example).
- Explain, using Natechs as relevant to your operations, how development of the emergency plans has been linked to and informed by your MA identification and evaluation procedure and outputs.
- Show the record of when Natech aspects of the plan were last tested, the lessons learned and how this was used to improve the plan.
- I'd like to look at training records for staff with key roles [select from on-site emergency team], including those responsible for:
  - providing top level direction to the operator's actions during an emergency;
  - monitoring extreme weather events/receiving early warnings;

- communicating with emergency services;
- carrying out on or off-site mitigatory actions; and
- staff member(s) not immediately involved with response, but who may be at risk.

- Discuss with select staff with key roles (as above):
  - Explain your role in responding to an emergency involving [flood, lightning, storm, extreme cold weather, etc].
  - How would your actions be different in an extreme weather incident, from other incidents you may respond to?

Expectations/demonstrations

Linked to the identified Natech scenarios, the CA expects operators to plan how to respond to natural hazards and climate impacts, to develop and implement appropriate emergency plans, to manage both present and longer-term risk to ALARP levels.

Source: Natech Risk Management common inspection criteria (JRC 2020).

The risk of MAs triggered by natural hazards should be taken into consideration in emergency planning. Accident prevention and mitigation measures should be effective even during natural-hazard conditions, eg, during earthquakes, floods, heavy precipitation, high winds, or extreme temperatures. Measures that are not effective under such conditions should be considered ineffective also in the emergency plans for major Natech accidents. In particular, stand-alone utilities, such as back-up power generators and water reservoirs, should be available even after the impact of a natural hazard has occurred and if not then they cannot be credited as control measures. If this is not possible, emergency plans should clearly state which utilities can be guaranteed to remain available and which may be unavailable for the response in the event natural hazard strikes. Emergency plans should discuss possible response strategies to adopt when the main utilities are unavailable.

Operators should identify specific procedures to prevent Natech accidents or to mitigate their consequences in response to natural hazard impacts and early warning. These procedures should be put into action before any Natech accidents occur. In particular, the procedures should clarify:

- roles and responsibilities of the establishment's staff;
- actions to be performed when a natural hazard hits;
- how much time each action takes;
- the exact conditions that initiate the procedure.

The Natech aspects of emergency plans should be tested and reviewed.

Further detail on expectations for Natech emergency planning is provided in Natech Risk Management common inspection criteria (JRC, 2020).

Regulatory requirements – Regulation 5

(1) Every operator must take all measures necessary to prevent major accidents and to limit their consequences for human health and the environment.

Sample Questions

- Explain how your management system, as a whole, enables you to comply with Regulation 5 of COMAH? Specifically, how does your system ensure you are maintaining risks to ALARP, and have appropriate management system review and revision cycles and an appropriate improvement plan to ensure risks will remain ALARP in the future?
- How does your management system deal with the possibility that Natech risks may have increased since the assets at your establishment were installed or that risks may continue to increase as the climate changes in the future?
- Have you reviewed your engineering standards and other corporate guidelines to understand:
    - any national or internation work ongoing to update the codes and standards upon which you rely, to incorporate changing climate impacts/conditions?
    - which (if any) of your corporate documents contain climate relevant details?
    - which may require updating (for example, old design codes which contain historic climate data that is not representative of current conditions)? o how you may need to account for future climate change to future proof the codes or recognise at what point in time they may need to be updated?
- How do you identify or implement compensatory risk reduction to mitigate for any degradation in the level of risk reduction that may have already been caused, or could be caused in the future by climate impacts? (eg, if an asset is identified as designed to a historic code which is no longer representative of present day or anticipated future conditions and thus could be operating outside its design intent, do you consider this increased risk of failure and implement suitable compensatory risk reduction?)
- Show me the management system record/records which assess the risk of [sample relevant to the establishment risks - flood/extreme cold/lighting/storms/ extreme heat]

and demonstrate risks are ALARP, or you have an improvement plan to ensure risks are ALARP and thus you are using All Measures Necessary to prevent and mitigate MAs (ie, Natech) risk.

Expectations/demonstrations

The operator has a plan to deliver Climate Change Adaption (CCA) work (necessary measures, today and in the future) through its existing management system, whenever possible using existing documentation and systems and not duplicating existing work. This to include a plan to review and revise the management systems as well as wider control measures.

CCA work is done to a recognised standard(s) (such as ISO 14090/91 and BS8631) and if not, the operator shows its alternative approach is consistent with a recognised standard(s).

The operator understands the need to recognise when a relevant standard, which is relied upon to deliver safety (such as a specific engineering code/standard or guidance document) has or has not been updated to incorporate climate change matters, and if the standard has not been updated, can demonstrate that any climate implications have been considered and appropriate risk reduction measures planned or implemented.

Published guidance is used to help deliver the CCA work and if not, the operator shows its alternative approach is consistent with published guidance – in particular as included and signposted in : CDOIF Guideline - Adapting to climate change.

CCA risk assessment and risks are prioritised to plan for delivery and inform relevant operational and emergency response procedures.

The operator has considered explicitly the climate change impacts (internal, external and consequential) in their assessments.

CCA work is periodically reviewed, and a review is required following a significant climate change related event (or near miss). This periodic review can be aligned to whenever the Management System is reviewed.

Annex 2 – Performance rating

TOPIC PERFORMANCE SCORE

60	50	40	30	20	10
Unacceptable	**Very Poor**	**Poor**	**Broadly Compliant**	**Fully Compliant**	**Exemplary**
Unacceptably far below relevant minimum legal requirements	Substantially below the relevant minimum legal requirements	Below the relevant minimum legal requirements	Meets most of the relevant minimum legal requirements	Meets the relevant minimum legal requirements	Exceeds the relevant minimal legal requirements
Most success criteria are not met	Many success criteria are not fully met	Several success criteria are not fully met	Most success criteria are fully met	All success criteria are fully met	All success criteria are fully met
Degree of noncompliance extreme and widespread	Degree of noncompliance either extreme or widespread	Degree of noncompliance either significant, or not easily remedied	Degree of noncompliance minor and easily remedied	No evidence seen of noncompliance	Actively seek to further improve standards
Failure to recognise issues and their significance, and to demonstrate adequate commitment to take remedial action	Failures not recognised, with limited commitment to take remedial action	Limited recognition of the essential relevant components of effective safety and environment management, but demonstrate commitment to take remedial action	Management recognises essential relevant components of effective safety and environment management, and commitment to improve standards	Management competent and able to demonstrate adequate identification of the principal risks, implementation of the necessary control measures, confirmation that these are used effectively; and subject to review	Management competent, enthusiastic, and proactive in devising and implementing effective safety and environment management systems to 'good practice' or above standard

INDICATIVE CA ACTION

Prosecution / Enforcement Notice*	Enforcement Notice* / Letter	Enforcement Notice* / Letter	Letter / Verbal warning	None	None

*Regulation 27 of COMAH extends certain Health and Safety at Work Act 1974 (HSWA) powers to persons authorised by section 108(1) of the Environment Act 1995. This has the effect of permitting agency officers to carry out certain functions that they would not otherwise be able to do. Authorised persons may issue Prohibition Notices (PNs) under Regulation 23 of COMAH, and Improvement Notices (INs) under section 21 of HSWA, but only insofar as the IN cites a breach of COMAH. Agency authorised persons do not have powers to serve INs under s21 for breaches of other legislation at COMAH establishments, nor can they serve PNs under HSWA s22. Agency officers do not have powers to enforce under other health and safety legislation.

Annex 3 – Key and definitions

ALARP	As Low As Reasonably Practicable
AMN	All Measures Necessary (as per COMAH reg 5)
CA	Competent Authority (for COMAH in this guide)
CCA	Climate Change Adaptation
CDOIF	Chemicals and Downstream Oil Industries Forum
CIM	COMAH Intervention Manager
CIRP	COMAH Intervention Resource Plan
COMAH	Control of Major Accidents Hazards (regulations)
CSF	COMAH Strategic Forum
DG	Delivery Guide
EMM	Enforcement Management Model
ISO	International Standards Organisation
L&D	Learning and Development
MA / MAs	Major Accident / Major Accidents
MAH / MAHs	Major Accident Hazard / Major Accident Hazards
MATTE	Major Accident To The Environment
MHMS	Major Hazard Management System
Natech	Natural hazard triggered technological accidents
SFAIRP	So Far As Is Reasonably Practicable
SMS	Safety Management System (which may include aspects of any environmental management system relevant to MATTEs)
UKCP18	UK Climate Projections (2018)

Annex 4 – Linkage from Natech characteristics/case studies to specialist disciplines

Lorum ipsum

The CA intends to develop further guidance for specialists in future versions of this DG

Annex 5 – Specific matters for different natural hazards

Lorum ipsum

The CA intends to develop further guidance on specific matters relevant to different natural hazards in future versions of this DG

Annex 5a – Flooding (including due to river, coastal surges, reservoirs, groundwater and sea level rise) (eg, most of current flood DG)

Annex 5b – Drought (including saltwater intrusion)

Annex 5c – Lightning

Annex 5d – Storms (including high winds, high rainfall, coastal surges, landslip, erosion)

Annex 5e – Winterisation (including ice, prolonged cold, high snow fall)

Annex 5f – Heatwaves (including high temperatures, increase in sunlight, increased lightning strikes, subsidence or heave)

Annex 5g – Wildfire

Annex 5h – Consequential impacts (including loss of incoming power or communications, supply chain problems, reduction in dilution or dispersion)

Annex 6 – Officer and Inspector competency

Prior to considering this DG in the context of planning interventions for Natech and climate change adaptation, officers and inspectors should be familiar with the three CDOIF publications on the PSF website CDOIF – Process Safety Forum:

- Climate Change Adaption Risk Assessment Guide - Revision 1;
- Understanding the risks of a changing climate, and managing them safely – Climate Change Adaption Risk Assessment Guide Companion Slides; and
- Climate Change Adaption Risk Assessment – Suggested Template.

Officers should also be mindful that this is a rapidly evolving area and should make use of internal resources and CA networks to keep up to date with any new guidance and expectations. For example, updated climate impact information, such as National assessment of flood and coastal erosion risk in England 2024 - GOV-UK.

Various international decisions and guidance provides context to the actions required and the urgency to improve awareness and develop appropriate plans, such as:

- Transboundary Effects of Industrial Accidents: Draft decision on strengthening Natech risk management (unece.org);
- Managing Risks from Natural Hazards to Hazardous Installations (Natech): A Guide for Senior Leaders in Industry and Public Authorities (unece.org); and
- Natech risk management guidance for operators of hazardous industrial sites and national authorities (europa.eu).

In addition, when relevant, the linked documents, especially those related to environmental permitting:

- EA:
  - Develop a management system: environmental permits Develop a management system: environmental permits - GOV.UK;
  - Climate change: risk assessment and adaptation planning in your management system Climate change: risk assessment and adaptation planning in your management system - GOV.UK (See section “A changing climate”); and

    - Adapting to climate change: industry sector examples for your risk assessment Adapting to climate change: industry sector examples for your assessment - GOV.UK.
- [NRW refs]
- [SEPA refs]

To support the sample strategy for more detailed interventions (eg, the ongoing interventions which may follow the initial interventions), and associated audit questions, it is advisable for the inspection team to be familiar with other relevant guidance aimed at climate change adaptation management system inspection and audit, such as:

- EC - CIC - Natech Risk Management;
- EC Joint Research Centre Common inspection criteria: Natech Risk;
- EC JRC121493 CIC Major Accident Hazards Bureau Natech Risk Management common inspection criteria;
- Climate change risk: A good practice guide for Audit and Risk Assurance Committees - NAO insight [Note: whilst this tool is aimed at audit of government organisations, its content related to physical risks is relevant to COMAH inspection techniques, moreover, there is much COMAH relevant content related to risks associated with the transition to net zero]
- ISO / BSI publications relevant to embedding adaptation into management systems [At the time of writing, ISO 14002-3 and 45007 were both under development. ISO has published a guideline for 9001 Auditors at APG Auditing Climate Change issues]
- Professional bodies and trade association adaptation guidance, such as IEMA guidance on climate change adaptation.

Moreover, it is advisable that the CA team is led by an officer who is already experienced in making COMAH AMN judgements (see CDOIF risk assessment guidance CDOIF guideline that is in preparation, and CA AMN guidance All measures necessary), and has undergone an appropriate level of training – such as the Agencies' Regulatory Officer climate change adaptation learning (4 modules), or other ISO14090/91 training, and:

- EA: All staff Adaptation training and Nature emergency training (both on Learning Zone), plus tools and guidance on the Climate Academy and Regulating for Climate Change SharePoint sites, including the EPR Audit checklist
- [NRW refs]
- [SEPA refs]

This delivery guide is not prescriptive and does not provide a checklist of benchmarked compliance expectations, so adequate inspector competence is required to enable proportionate consideration of Natechs within the CA inspection planning framework. Adequate competence is also required to recognise available control measures (including prevention, mitigation, and underlying management systems), the timeframes within which it may be appropriate for the operator to implement the further measures, the extent to which operators are using All Measures Necessary and compliance with the various relevant aspects of the COMAH regulations (see Annex 1).