Process Safety and Reliability Group
Taking You Further With Safety >>>>>

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FAQ for Effective e-PHAs (Online/Remote Process Hazard Analysis)

General

What is an e-PHA?

PHA (Process Hazard Analysis), using any of the techniques such as HAZOP, LOPA, Structured What-If, and other methodologies is usually conducted through in-person, face-to-face meetings at Company facilities. We refer to this mode of operation as a “traditional PHA”. An e-PHA, also called a remote or an online PHA, is any PHA that the Core Team members are not co-located, i.e., they are not physically in the same location during the full PHA. In one extreme, it could be that most of the team is in a conference room, whereas Facilitator/Chairperson and/or Scribe/Recorder are connecting remotely. Or, in the other extreme, it could be that everyone attending the meeting is calling in from a different location, a situation we mostly run into during the current “Stay Home, Work Safe” directives issued by many companies and municipalities around the world.

What are the benefits of an e-PHA? When would you prefer an e-PHA over a traditional PHA?

Reduced costs, due to no travel and accommodation expenses. More flexible scheduling for the facility owner and part-time team members, e.g., vendors, process/equipment-specific SMEs, etc.. Can meet for less hours per day with more days. Shorter days help to avoid burnout and late afternoon fatigue. Site employees don’t have to lose a whole day to the meeting or travel to another location to attend PHA meetings.

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What are the challenges of an e-PHA?

At least one remote team member will not be able to connect at the start of a meeting, which may cause delays. You can avoid this problem by organizing the remote connections and testing all of them well before the initial meeting starts.

The Facilitator/Chairperson cannot see who has left the meeting; therefore, the Facilitator/Chairperson does not know if anyone has missed any part of the PHA discussion. To monitor attendance, use the features provided in the videoconferencing service / online meeting platform that you use.

Network equipment failure or power failure during the meeting will cause delays. By planning for these events, the length of the delay can be minimized. Contingency plans could include providing spare equipment (microphones, headphones, headsets, router, UPS), as well as being prepared to use cellphones or landline phones for a teleconference.

Security for confidential / proprietary information that is emailed to the team members will not be a new challenge provided that the team members use the same commercial email system that they would normally use for their work. The current security risk does not change for an e-PHA versus a traditional PHA.

How long does an e-PHA take compared to a traditional PHA?

The total duration of a PHA is not as dependent on the communication method of meeting as it is on the PHA methodology, process unit size, number of operating modes, PSI (Process Safety Information) availability and accuracy, Facilitator/Chairperson selection, Scribe/Recorder selection and team meeting discipline. For the individual meeting days, the maximum recommended meeting duration is not dependent upon how the team meets. For any PHA, we would consider an optimal number of hours per day for a meeting to be 3- 6 hours. Other factors such as deadlines and people/resource availability can cause an organization to increase or decrease those durations. An e-PHA allows more flexibility in terms of scheduling the PHA meetings. Based on our prior experience, an e-PHA may take up to 20-30%

longer; however, the additional costs of assembling meetings may be offset by less travel costs.

How does the quality and efficiency of an e-PHA compare to a traditional PHA?

The configuration of the PHA meetings can have a minor effect on the quality of a PHA. However, PSI availability and accuracy, team member process knowledge, Facilitator/Chairperson experience, the Scribe/Recorder experience, and team meeting discipline, will have more of an impact on the quality of any PHA regardless of how the team meets.

Also, an e-PHA can be as efficient as a face-to-face PHA provided that the proper preparation is followed and the meeting discipline is maintained consistently. Without these two major success factors, an e-PHA can be as inefficient as a face-to-face PHA meeting.

Which Online Meeting Platform should we use?

The choice of online meeting platform is typically determined by the owner/organizer of the e-PHA. We use whatever tool that the client is comfortable using, which also meets client IT/security requirements. The important point for a successful e-PHA is that the PHA Team meets ahead of time to understand the tools provided by the online meeting platform and learn how to use them effectively during the PHA discussions. We recommend a “dry-run” as part of preparatory work to ensure the online meeting technology works in advance.

Once the COVID-19 pandemic is over, will it be back to business as usual or do you expect e-PHAs to play a bigger role in the future?

We will have to wait and see how long industry has to continue its operations under the current constraints of COVID-19 pandemic. The longer they last, the more likely e-PHAs will need to be completed. Depending upon how favorable their experience is with e-PHAs, companies will make their own decision on their preferred approach. It could be a mix of preferences across the industry. Also you may want to start a PHA in-person especially to address facility tour and initial meeting and building rapport. You may decide to complete the remainder of the PHA in an e-PHA format. For instance, we performed many PHAs where LOPA discussions were completed through an e-PHA setup.

Note that PSRG has been conducting e-PHAs before the start of the COVID-19 pandemic. For vendor PHAs where the vendor's Subject Matter Expert (SME) was only required part-time, a remote audio and computer connection was established between the vendor and the PHA team. In addition, PSRG has performed e-PHAs in the past because of meeting facility limitations or participants would all have to travel from out of town. E-PHAs are not new. They have just become more of a requirement in the current environment.

Preparation

How do you node and share P&IDs for an e-PHA?

There are two approaches. The traditional method is to use multi-colored highlighters, by hand. These drawings could be scanned and printed for distribution to team members. Alternatively, you could use a PDF editing tool to highlight the lines and equipment using the highlighting tools in the program. The digital drawing file (in .PDF) can be either emailed to team members and/or printed out for them. When on-site printing is not available, you would need to think ahead of time for online printing services or taking the PDF files to a local print shop before the e-PHA starts.

What do you do differently in preparing for an e-PHA versus traditional PHA?

Besides checking all the technical aspects (online meeting platform, headsets, microphones, cameras, connectivity issues, firewall/security issues, etc.) of a remote meeting, you also need to think about how to share documents both before and during the meetings. If you would like to use printed copies of P&IDs, PFDs, and other documents, find a way to print them ahead of time. If you are going to use the digital copies during e-PHA, then make sure you have either dual monitors or another device

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that you can use during the meetings. Another option is to use multiple meeting connections to handle sharing P&IDs on a separate thread than the shared discussions. There will be a learning curve associated with e-PHAs so allow the team to adjust and settle to a productive rhythm. It might take a little bit longer initially but we have also experienced that meetings start right on time since not everyone is in the same location. There might be less time lost with side conversations and other non-relevant discussions that might happen in a typical in-person meeting.

How can an Operator attend an e-PHA?

An Operator is a core member of the PHA Team and is required to help team members understand the operation of the process and to meet regulatory requirements. To enable an Operator to participate in an e-PHA, from either the facility or from home, he/she should have a computer with internet access in a quiet room as well as suitable headphones and microphone. It is important that the Operator and the equipment be allocated for the full e-PHA while PHA discussions are conducted. If an Operator's computer loses its connection to the online meeting, or the Operator needs to attend other business, then a decision must be made by the PHA Team to either continue the discussions if there is enough knowledge in the room to cover those points or to suspend the meeting until the Operator can return or an alternate Operator can be provided.

Do you prefer to pre-populate the PHA worksheet before the start of an e-PHA?

Same as preparing for a traditional PHA. Any prior preparation would help the speed of the meeting as long as it does not limit the discussions. It also helps so that Scribe/Recorder can rest while the team is reviewing an already populated initiating cause. Make sure that the Scribe/Recorder and Facilitator/Chairperson work together when pre-populating the PHA worksheet.

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In-Meeting

How do you document attendance during an e-PHA?

You can circulate an attendance sheet by email to be filled electronically. A better option is to take a screen capture of the list of participants from the Online Meeting tool and use it in the report as a wet signature for attendance. You can also use both approaches.

How do you conduct a Facility Tour at the beginning of an e-PHA?

If an e-PHA is conducted for a Project PHA (a facility that has not yet been constructed), we conduct a virtual plant tour using 3-D models developed during the project. For an existing facility, we have used pictures from the facility site to understand what is around it and how the hazards in a facility can potentially impact its surroundings. Another option is to assign an Owner/Operator's representative to walk the Facility prior to the PHA using a "checklist" provided by the Facilitator/Chairperson, to note onsite conditions.

When do you use Video vs only Audio during an e-PHA?

Having a video conference at the beginning of an e-PHA is useful when you go through introductions and are building rapport with the team. During the actual hazard analysis discussions having a Video might not add any value since you need to concentrate on the shared window where PHA notes (PHA Worksheet) are taken and/or P&IDs are shared. In that case, you can turn off the video. In any case, it is a good idea to have a tool that allows you to have a video feed added when needed but also has a good voice connection.

NOTE: In this explanation, the term "video" refers to the use of a video camera and not the Shared Window that is shown on computer screens and/or projector screens.

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What other online tools can you use during an e-PHA?

Depending on the online Meeting platform that you are using, you can use private chat (for side discussions between attendees related to the PHA and for a short amount of time), sharing any Team Members screen (for a Participant to point to a Process Safety Information, PDF, 3-D Facility Model, or any other document), whiteboard (for a Participant to explain a concept or situation with a drawing).

How do you manage communications between team members and the Facilitator/Chairperson?

In the e-PHA, communication between team members is essentially the same as a traditional PHA. In the e-PHA, there is the possibility of using a "Chat" feature but that approach can create confusion, be distracting and can be overlooked. Hence the preferred approach is a single line of communication that everyone hears. Since team members will be muted when not speaking, they may begin speaking without remembering that they are muted. In this case, the Facilitator/Chairperson should routinely remind the team members to unmute before speaking.

How do you share P&IDs or other documents during e-PHA?

For the Facilitator/Chairperson and Scribe/Recorder, they may prefer to have hardcopies wherever they are located. The other team members who are remote could view the highlighted P&IDs on their single screen and manually switch between the PHA worksheet window and the P&ID window. Alternatively, they could split their display into two parts to view both windows at the same time. Or connect a second display for the P&IDs. Ideally, hardcopies for everyone allows for easier viewing of the drawings.

When the Facilitator/Chairperson needs to point out a specific line or piece of equipment, he/she would ask the Scribe/Recorder to display the P&ID on the shared window such that everyone can see the specific equipment in question.