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Inland Response Stream:

Inland Pipeline Spill Challenges and Lessons Learned focusing on Swift Water Response

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**EXTENDED ABSTRACT**

Inland oil spill risks continue to increase based on growing pipeline, rail, liquids storage, and transportation infrastructure worldwide. This paper will address these risks in three approaches: lessons learned from the author's experience on spills in the United States, a review of the American Petroleum Institute's Swift Water Spill Response Guide, and international case studies.

This paper will utilize the author's experiences and lessons learned from deployments on multiple, large pipeline spills in remote locations in the United States from 2017 to 2021 to improve future pipeline spill preparedness and response. As the liquids pipeline monitoring technology has improved through Supervisory Control and Data Acquisition (SCADA) and overall pipeline integrity, larger pipelines are being constructed and proposed around the world; however, this also would lead to higher worst case discharge volumes. Even if the SCADA system performs 100% optimally to shut down a large pipeline spill, thousands of barrels of oil could still be released to the environment in a pipeline rupture scenario. Larger pipeline projects over the last 15 years have increased the Worst-Case Discharge Potential from line drain down following a leak or complete rupture. Pipeline routes are typically proposed and approved away from large population areas. As a result, a large portion of pipelines are routed through remote areas that are hard to get to. In many situations, a dirt road is the only access to a liquids pipeline pump station. Many of the liquid pipeline incidents in the last 5 years have been in remote or difficult to access areas. Lessons learned in logistics, the role of an emergency operations center, and initial response from the author from on-site experiences on spills in the United States in North Dakota, South Dakota, and Missouri, will be presented in the paper.

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The author was a member of the American Petroleum Institute (API)/Association of Oil Pipelines (AOPL) Emergency Response Work Group from 2017-2021 and a primary contributor to API/AOPL Swift Water Spill Response (SWSR) Guide. The API SWSR guide, published in May of 2021, is a compilation of industry best practices describing initial spill response management and operational tactics in swift waters, a uniquely challenging environment. The API/AOPL Emergency Response Work Group wanted to create a collaborative SWSR guide, vetted through a majority of inland pipeline companies, that was concise and focused on overall swift water tactics that covered most of the United States. This paper will summarize the API SWSR Guide including the highest priorities of spill response: people, environment, and assets. The intended audience for the API SWSR Guide are responders that have baseline spill response knowledge. Operations managers will be able to use the API SWSR Guide to develop timely Incident Command System (ICS) 201 briefs, organizational structures, and Incident Action Plan (IAP) operational work assignments. Safety of responders will be emphasized, particularly site safety, and personal protective equipment (PPE). Site safety and job specific hazard identification best practices will inform responders, managers, and Incident Commanders of the important aspects of overall safety management. Site evaluation topics will cover the following areas: access, staging area, boat launches, shoreline composition, and wildlife considerations. Summary highlights of the most important aspects of the API SWSR will be included in the paper and coupled with lessons learned from the last five years from various incidents. Incidents include Swift Water Response Case study information from a 7 May 2021 United States tanker truck release of 8500 gallons of gasoline into the North Saint Vrain Creek in Colorado. On November 14, 2021, UCGPE22701 - UMR 372 trainer derailment, struck the

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nose of a barge resulting in the derailment of two locomotives on the Mississippi River. Each locomotive was carrying approximately 2,300 gallons of diesel fuel, that leaked into the river.

Paper research will look at recent case studies of international liquids pipeline spills from Europe and the Middle East. Some of these incidents include the August 21, 2021, spill of 100 cubic meters of crude oil from the Europe Asia Pipeline Company in Israel and the May 29, 2020, diesel oil spill industrial disaster near Norilsk, Krasnoyarsk Krai, Russia, flooding local rivers with up to 17,500 tons of diesel oil. Case studies will be presented for swift water response for oil and gasoline spills including incidents from 2017- 2021. The paper will ensure that large and small spills impacting small rural communities will be represented for inclusion to ensure the unique challenges of limited resources are represented throughout.