



G.K. Hills
Tank Inspection

A division of G.K. Hills Consulting Ltd.

Aboveground Storage Tanks

Top 3 Barriers to Sustainability

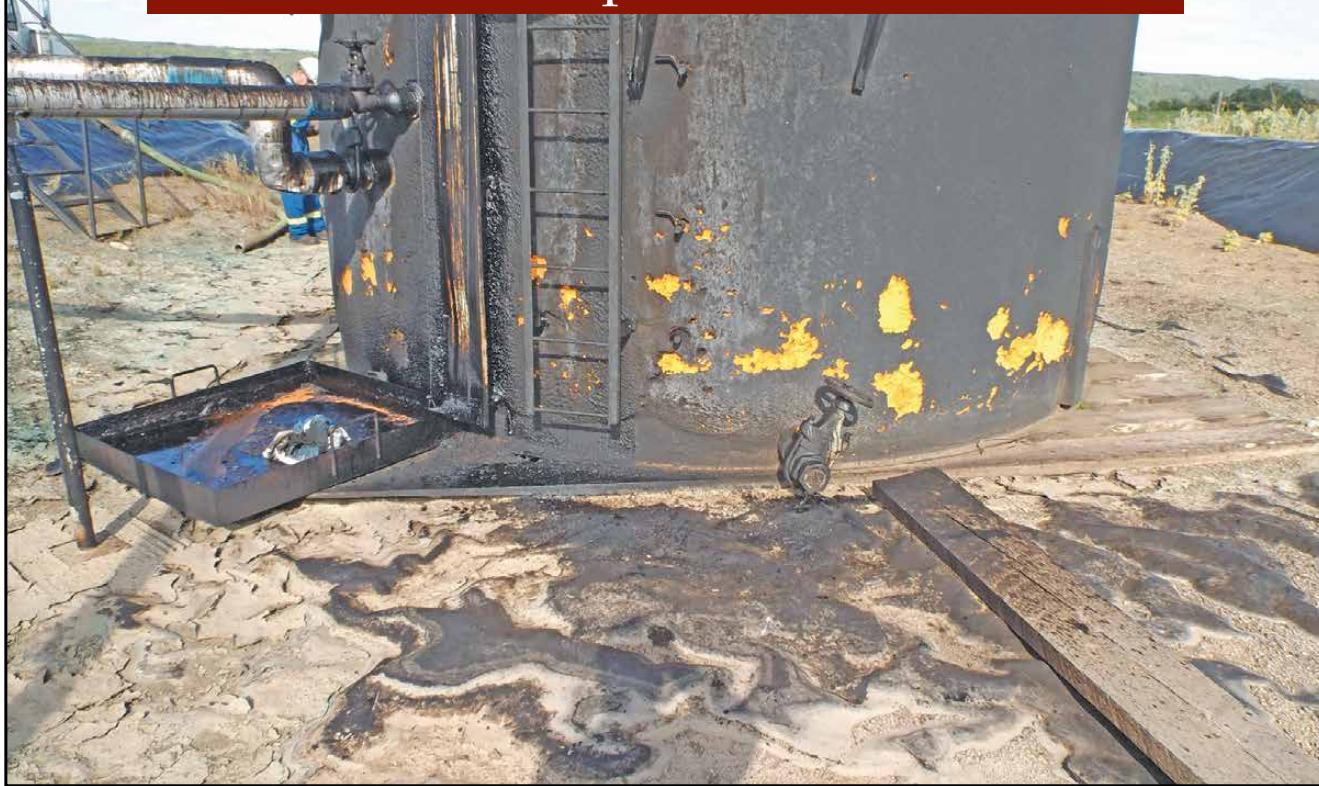


MOVING BEYOND COMPLIANCE
*Monthly Visual Examinations Are Key
to Sustainable Operations*

What are the TOP 3 FAILURES for Aboveground Storage Tanks?

1. Overfilling of tanks
2. Leaks & drips from valves / fittings
3. Spillage associated with inventory movement

***NOT* catastrophic tank failures!**



NO COMPROMISE. NO EXCUSES. *Let us show you how.*

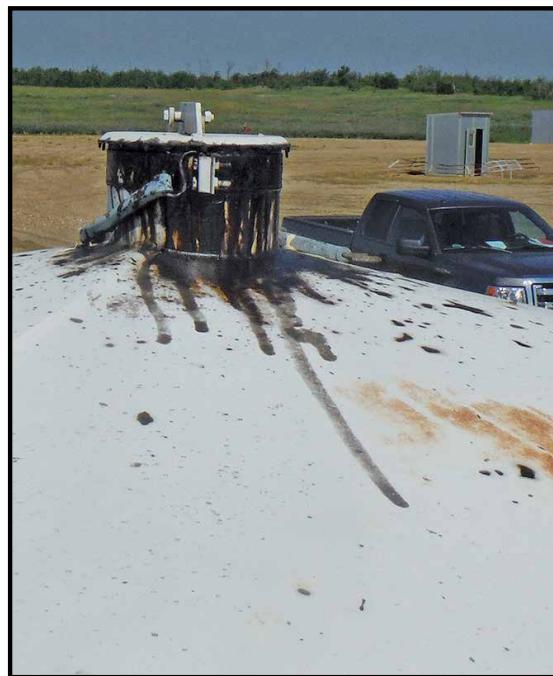
For more information or to schedule a meeting, demonstration or presentation

CONTACT E.A. (Beth) Brueckner | 403.660.5721 | beth@gkhills.com

Office: 587.333.1799 P.O. Box 65 Millarville AB Canada T0L 1K0 www.gkhills.com



1. Overfilling of Tanks



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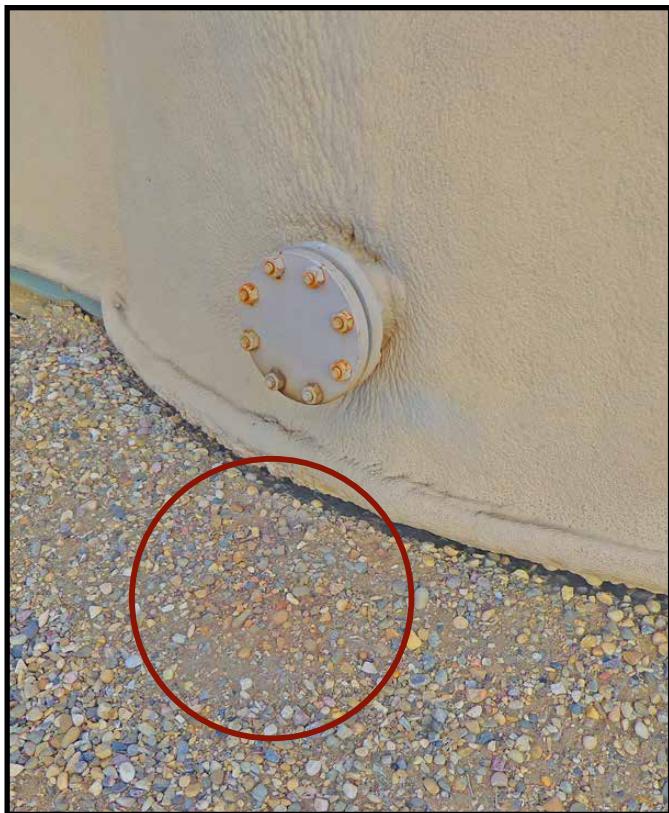
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2. Leaks & drips from valves/fittings



Operable and nonleaking fittings, nozzles, and hoses

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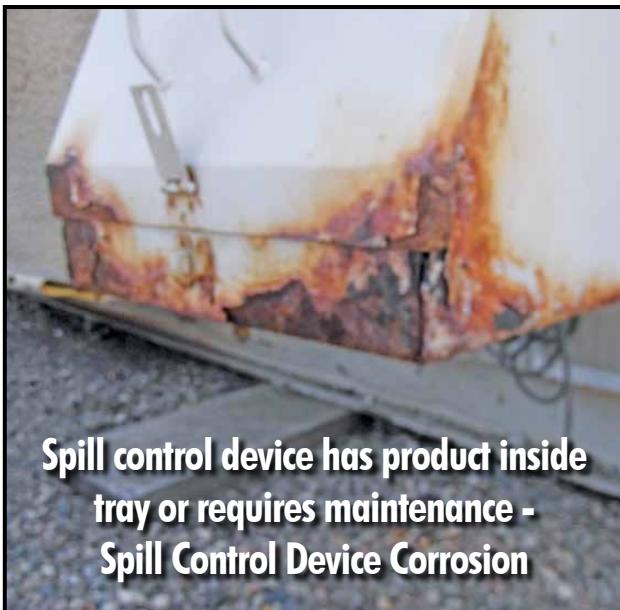
3. Spillage associated with inventory movement



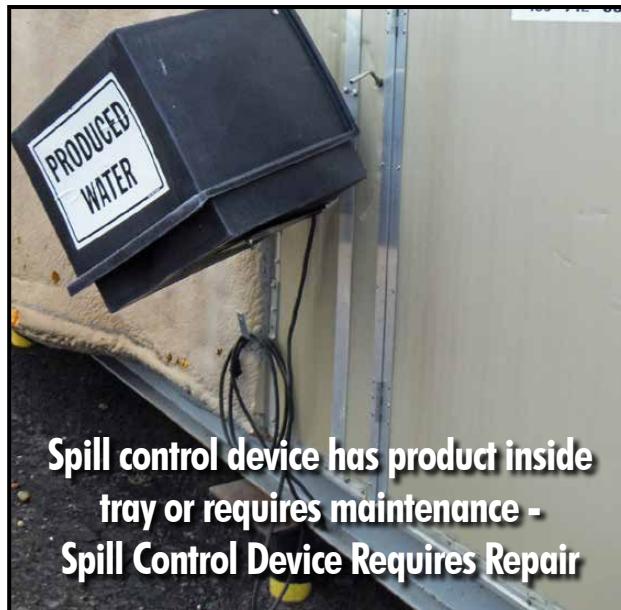
**Spill control device has product inside tray or requires maintenance -
Product in Tray**



**Spill control device has product inside tray or requires maintenance -
Spill Control Device Missing**



**Spill control device has product inside tray or requires maintenance -
Spill Control Device Corrosion**



**Spill control device has product inside tray or requires maintenance -
Spill Control Device Requires Repair**

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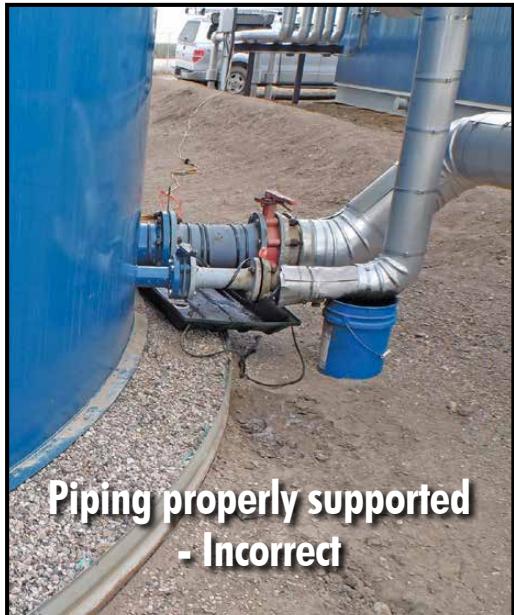
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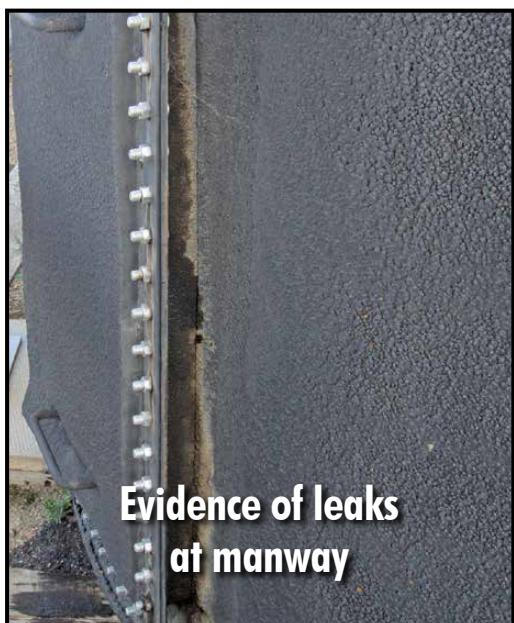


Spotting the Trend



During the 2012 & 2013 inspection seasons, G.K. Hills inspected approximately 1500 upstream tanks. About 500 tanks in, we noticed a trend similar to the information contained in the Alberta Energy Regulator release reporting data.

Approximately 86% of the recommendations in the inspection reports were specific to "operational items" – leaks and drips and overfilling.



Requirements for storage, including aboveground storage tanks, fall under the authority of the provincial regulator:

- Directive 055 Storage Requirements for the Upstream Petroleum Industry (Alberta)
- Saskatchewan Upstream Petroleum Industry Storage Standards S01 (Saskatchewan)

The intent behind these requirements is to prevent spills. The driver behind the requirements is release reporting data.

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What are the consequences?

Clients often ask us what will happen if they don't follow the recommendations resulting from an inspection. It's not an easy question to answer, no one can predict the potential costs associated with a spill or failure, but it's definitely going to cost more than any recommended repair or maintenance.

The longer the delay in repairing or maintaining, the greater the cost and the higher the likelihood of more stringent regulatory requirements.

In adherence with D-055, the purpose of routine monthly examination is "to ensure that materials stored in the upstream petroleum industry are adequately contained to prevent soil, surface water, and groundwater contamination through effective primary containment, secondary containment, and leak detection. Experience has shown that when these preventative systems are in place, the next most significant contributor to contamination is accumulated release/spills.... Approval holders or licensees should include within their operating procedures proactive measures to prevent the occurrence of these releases, such as plans and policies to prevent releases, as well as documentation of their frequency..."

Individual awareness and responsibility are needed to prevent spills for reduced contamination and long term cost to industry.

Better is better. We have created a comprehensive Monthly Visual Examination system that will not only mitigate environmental and safety risks, it allows you to leverage data and improve your bottom line.

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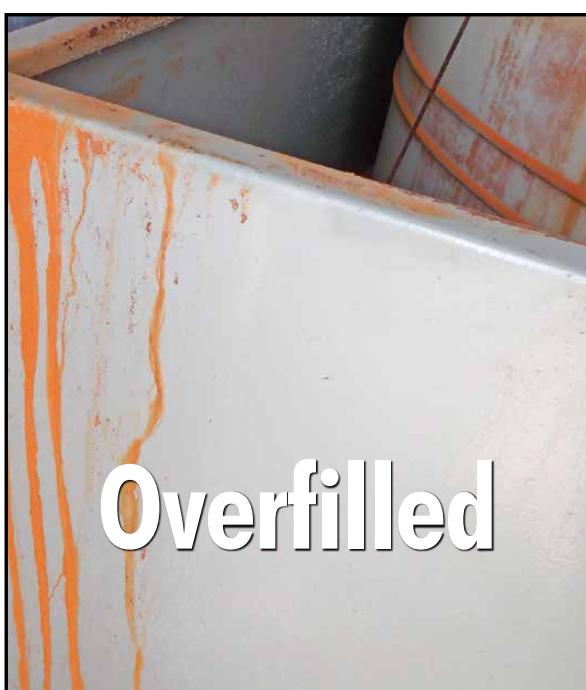
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Moving Beyond Compliance

The AER Incident reports for the month of October 2014 cited a total of six incidents which reported spills involving tanks. A total of **140 cubic meters (882 barrels) of product were spilled**. One had “no cause indicated”, one “leaking valve” and four were “overfilling”.

At single well batteries, during abandonment and reclamation activities (end of life), the majority of contamination is associated within the tank and dike area (not under the tank!!).



Recognizing there is a correlation between the actual inspection findings, release data and reclamation activities, we are working to increase awareness and have developed this training protocol.

Our Monthly Visual Examination tool is intended for operations personnel because we believe they have the most opportunity to:

- prevent spills and avoid cleanup costs;
- mitigate safety risks;
- avoid costly repairs and downtime, and;
- improve public perception.

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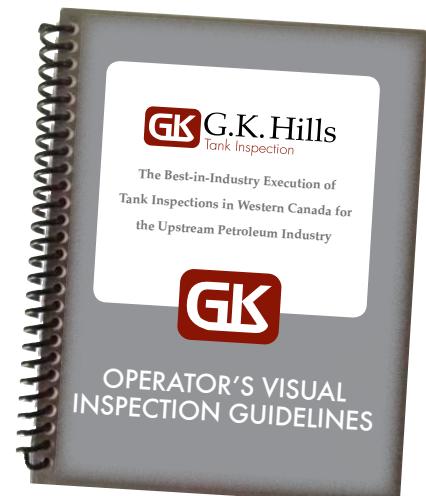
Individual awareness and responsibility are needed to prevent spills for reduced contamination and long term cost to industry.

Monthly Visual Examinations are key to sustainability

Implementation of preventative measures such as:

- Training
- Developing Core Competencies
- Improving Inspection Capabilities

support improved compatibility of upstream oil & gas operations with the environment while promoting sustainability.



Interested in making your operation more sustainable?

Contact G.K. Hills Tank Inspection to embark on your own journey to sustainability.

- *Lunch & Learn Sessions and Online Presentations*
- *Operator's Training & Handbooks*
- *Complimentary Consultations & Custom Solutions*

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