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Retirement for an Active SSDS

By Jason Cooper

As a property owner here in New York, there are many issues to deal with on a day-to-day basis. Some of these issues are straightforward while others require more time and effort for a favorable outcome and can be clouded with uncertainty.

If your commercial property has a subsurface environmental issue, or is threatened by one, the soil vapor that occurs naturally within the soil beneath your property may be impacted with contaminants that can accumulate over time and possibly intrude upwards into the building, affecting the quality of the building's interior air. Depending upon the concentrations of the chemical contaminants within the interior air, there may be some degree of human health exposure to building occupants.

An active sub-slab depressurization system (SSDS) is typically the remedial option retrofitted into the floor of the building for such a situation of existing or potential soil vapor intrusion. Once up and running for the prescribed period, the pathway to converting an active SSDS to a passive SSDS is not always clear. If you are contemplating deactivating your now-active SSDS, or considering whether this is

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NYSDEC's Green and Sustainable Remediation Initiative

by Richard Izzo

In early November, the New York State Department of Environmental Conservation (NYSDEC) issued an official Memorandum providing updated guidance and requirements associated with the implementation of the Department's Green and Sustainable Remediation (GSR) Initiative. The GSR Initiative applies to all sites remediated under 6 NYCRR Part 375.

Those of us experienced in working with NYSDEC under their programs were introduced to the GSR Initiative back in 2010 when the Department issued DER-31, Its Program Policy for Green Remediation.

NYSDEC Describes the GSR Initiative as follows:

"Green Remediation provides the framework for DER's approach to remediating sites in the context of the larger environment, a concept known as green remediation. Green Remediation (or greener cleanups) is a more sustainable approach to cleaning up contaminated sites. It considers all environmental effects of remedy implementation and incorporates Best Management Practices (BMPs) to minimize the environmental footprint of remedial cleanups. It is intended to be a holistic approach which improves the overall sustainability of remedial cleanups by promoting the use of more sustainable practices and technologies..."

This all sounds great, but how do we translate this vision into practical real-world solutions when designing and implementing remediation projects? Actually, there are several ways we have incorporated GSR practices into our cleanups over the past dozen years or so which not only achieve goals set forth by the Department, but actually provide cost savings to our Clients enrolled in NYSDEC's programs.

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"Load & go" soil excavation for beneficial reuse at brownfield site

Examples of these are outlined below:

Soil Management: Soil excavation and off-site disposal has historically been one of the chief (and most costly) remedial measures in Brownfield cleanups. Over the past decade or so, we have successfully reduced the volume of soil requiring disposal as regulated waste through more-thorough in-place testing and waste stream analysis so that much of the soils requiring disposal may be "recycled" for beneficial reuse. In addition, the New York City Office of Environmental Remediation (OER) has established a "Clean Soil Bank" in which Sites in City or State Programs with excess soil meeting acceptable regulatory criteria may share soil locally with sites requiring fill materials, thus greatly reducing fuel consumption and disposal costs. More thorough in-place soil testing also allows for less on-site soil handling, facilitating a "load and go" approach in which soils are excavated and directly loaded into trucks as opposed to stockpiling. Finally, for sites in which the removal of soils in excess of cleanup criteria is impractical or undesirable, NYSDEC allows for the materials to remain on site with in-place management through engineering and institutional controls.

Use of Recycled Materials: Traditionally, aggregate materials used for the installation of treatment systems were limited to virgin crushed stone or gravel. Recently, the use of recycled concrete aggregate meeting size and content criteria from State-Licensed facilities has been approved by NYSDEC.

Appropriate Sizing of Treatment System Components: The use of regenerative blowers for a soil vapor extraction or sub-slab depressurization system is a common component of a remediation program and represents a significant source of energy consumption over the life of the system. Thorough pilot testing using different vacuum sources enables us to properly size the vacuum source and provide the appropriate level of vacuum beneath the slab to achieve remedial objectives without oversizing the system, thus saving energy consumption. For systems requiring carbon pre-treatment, a smaller sized vacuum source helps minimize carbon adsorption, requiring less frequent carbon unit change-outs. Diligent monitoring of sub-slab vapor concentrations will also help in allowing system shut down or conversion to passive operation as soon as conditions allow (see lead article).

ISCO: In addition to the above, our use of in-place or in-situ remediation methods has become much more common in recent years including In-situ Chemical Oxidation (ISCO) in which chemicals are injected into the subsurface to destroy existing contaminants. NYSDEC has just released updated ISCO guidance along with the GSR Initiative Memorandum.

In addition, NYSDEC has indicated its willingness to consider more sites for monitored natural attenuation of groundwater contaminants as opposed to operation of active remediation systems, and encourages development-related green and sustainable building practices such as green roofs, solar shading, energy efficient construction design, water-saving plumbing fixtures for remedial program applicants .

The recent NYSDEC memorandum requires that Beginning January 1, 2024 all work plans and reports submitted to the Department under any of their remedial programs address GSR. In addition, the required engineering certifications for all remedial work plans and reports will now include a statement confirming the document was prepared in conformance with DER-31. NYSDEC will also require DER-31 to be included in all remedial design and site management activities.


Energy-efficient treatment system

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Active SSDS riser and fan

an option, read on as there are specific steps you can take to streamline the shutdown process saving time and money.

What is an active SSDS? Simply put, it is an engineered system that prevents soil vapor beneath the concrete building slab from entering the interior of the building by using an in-line fan or blower suitably sized to provide sufficient sub-slab vacuum.

An active SSDS is required by the New York State Department of Environmental Conservation (NYSDEC) and New York State Department of Health (NYSDOH) when elevated levels of contaminants are discovered in the sub-slab soil vapors and/or indoor air during a typical Phase II environmental investigation.

The installation, operation, and maintenance of an SSDS is energy-consumptive, costs money and requires time, so following the proper NYSDEC procedures are necessary to streamline the shutdown of active systems once impacted soil vapor has been eliminated to ensure that unnecessary work, post-system monitoring, and related expenses are not incurred.

The first step in a timely shutdown of the SSDS is to review past sub-slab soil vapor and indoor air sampling data for the building. If test results show the concentrations are trending downward and fall into the NYSDOH Decision Matrix to "Monitor" or "No Further Action" range, then both NYSDEC and NYSDOH should be contacted to assess the current situation and determine ongoing system adequacy for the conditions at hand.

If, after regulatory discussion with both NYSDEC & NYSDOH, it's jointly determined that previous data supports system shut down, then a formal request letter petitioning its termination must be sent to NYSDEC, subject to State approval. After such a request is approved, a subsequent SSD System Shutdown Work Plan is prepared and submitted to NYSDEC for additional approval. Be aware that a State-regulated SSDS cannot be shutdown prematurely, without NYSDEC approval of the written shutdown Work Plan.

A typical State-approvable shutdown Work Plan details the steps necessary to prove that the active system is no longer required. These steps include the following procedures:

1. Deactivate the active SSDS by shutting off the power to that system for a period of no less than 30-days – and do so during the heating season;

2. Complete sampling of the sub-slab soil vapor and indoor air during the heating season with the active system inoperative (off) for no less than 30-days. *Note: Collecting samples with the active SSDS re-activated (on) either continuously or intermittently, without allowing a sufficient shutdown period of at least 30 days or more will invalidate sampling data;*

3. Upon completion of the requisite sub-slab soil vapor and indoor air sampling, the SSDS can then be immediately re-activated;

4. Compare your sampling results to the NYSDOH Decision Matrices flow charts to determine the appropriate NYSDOH decision matrices mitigative action(s); and finally

5. Submit your final 'SSDS shutdown' report to NYSDEC and NYSDOH for their review and approval.


SSDS riser converted to passive operation

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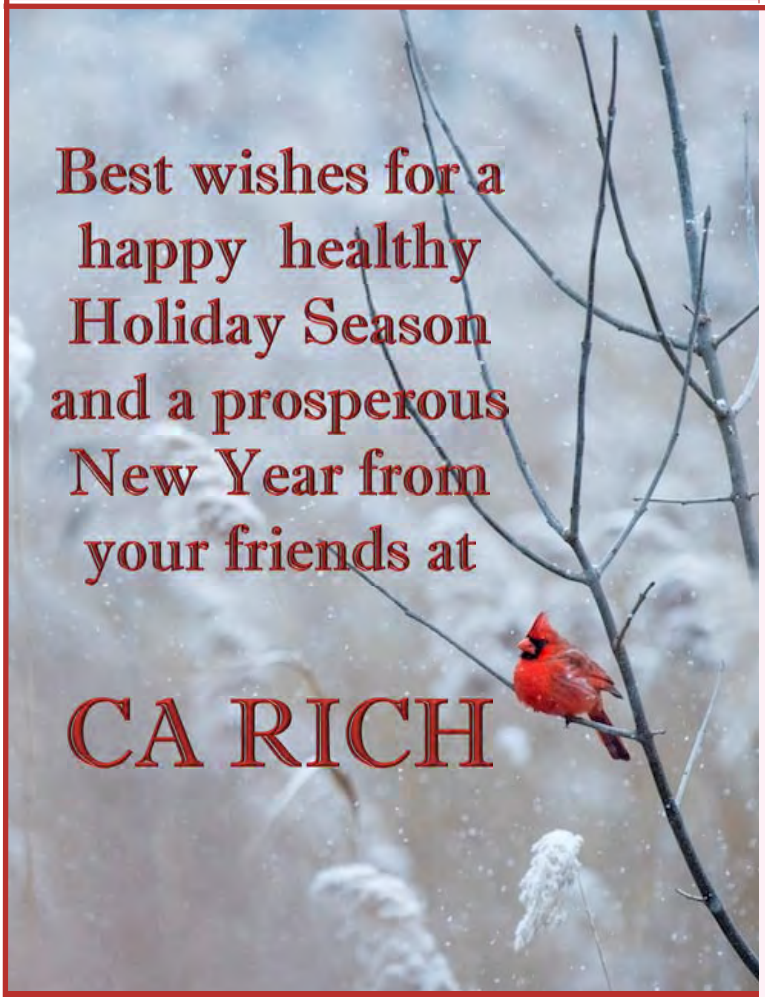
If the first round of sampling data is generally favorable for system shutdown, then there is one additional round of sampling required during the next subsequent heating season (the following winter). The scope of the additional second round of sampling is typically identical to the first round of sampling.

If the second round affirms the viability of the planned shutdown, one proceeds with petitioning NYSDEC & NYSDOH to shut down the active SSDS. Shutting down the active system is typically accomplished by disconnecting and/or removing the fan(s) or blower(s), thus removing active depressurization controlling/containing the induced migration of soil vapor beneath the building.

Existing SSDS piping is normally left in-place along with miscellaneous system components (assuming they are non-invasive) and allowed to vent sub-slab vapor naturally via the stack effect, thus effectively converting the active SSDS into a 'passive' system. Typically, the two (2) sampling event procedural scenario outlined above (i.e. one round each sucessive heating season) is required to support regulatory decision-making.

It is important to note that an active SSDS installed under agency oversight cannot be shut down without written permission from NYSDEC. Further, the aforementioned documents of this regulatory approval process are preserved, and if necessary, integrated into prospective purchase and/or tenant lease renewal terms in the event some new environmental condition warrants any future review.

If the above steps to deactivate an active SSD system are followed, then you, as building Owner or Lessee, are assured you are taking the most straightforward path to achieving that goal - foregoing unnecessary expense. If you have an active SSDS that you judge may be eligible for shutdown or have questions regarding the adequacy and effectiveness of an active system, please reach out to **CA RICH** and we would be happy to assist you in a manner most responsive to your needs.



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CA RICH CONSULTANTS

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