

Making HSRA Cost Effective...Still Protective

**A White Paper Sponsored by the
Georgia Industry Environmental Coalition**

**For consideration by the
Joint HSRA Reauthorization Study Committee**



Georgia Industry Environmental Coalition

October 2001

Acknowledgements

This HSRA White Paper was prepared under the auspices of the Georgia Industry Environmental Coalition (GIEC). The purpose of the paper is two-fold: (1) to share the collective experience of business and industry with HSRA to date and (2) to recommend improvements to HSRA that, if implemented, will make HSRA more cost effective while still being protective of human health and the environment.

Drafting assistance for the White Paper was provided by HSRA-experienced, environmental attorneys from law firms in collaboration with GIEC. GIEC wishes to thank these attorneys from the following firms:

Alston & Bird
Hunton & Williams
King & Spalding
Troutman Sanders

GIEC also appreciates the firms' willingness to share their significant experience with federal superfund and other state superfund programs that have the same legislative goal as HSRA: protection of human health and the environment.

Finally, special thanks to those HSRA site owners who provided cost data for their individual sites.

GIEC, formed in 1992, is a non-profit, membership organization of environmentally-regulated businesses in Georgia. Its members form a diverse group of over 30 companies, representing 20 SIC codes, with the shared belief that environmental regulations should, and can, be both protective and cost efficient. The mission of GIEC is to serve as a technically-based advocate for Georgia industry by promoting environmental regulations and policies founded on (1) protection of human health and the environment, (2) sound science, and (3) cost/benefit principles.

GIEC member companies are:

Alcan Aluminum Corporation • Alcoa Extrusions, Inc. • Arizona Chemical Company • Atlanta Gas Light Company
Colonial Terminals, Inc. • Damar, Inc. • The Dow Chemical Company • DSM Chemicals North America, Inc.
Engelhard Corporation • General Electric Company • Georgia-Pacific Corporation • Georgia Power Company
GNB Technologies • Gold Kist Inc. • Hercules, Inc. • International Paper • Kawneer Company, Inc.
Kerr-McGee Chemicals, LLC • Lockheed Martin Aeronautical Systems • Merck & Company, Inc.
Metal Coaters of Georgia • Mohawk Industries • Norfolk Southern Corporation • NutraSweet
Omnova Solutions, Inc. • Pharmacia • Southern Aluminum Finishing Company
Southwire • Thiele Kaolin Company • Tifton Aluminum Company, Inc.
Weyerhaeuser Company • William L Bonnell Company, Inc.

TABLE OF CONTENTS

EXECUTIVE SUMMARY i

1.0 INTRODUCTION AND BACKGROUND **1-1**

 1.1 The Real Cost of HSRA 1-1

 1.2 HSRA Compliance Cost Projection 1-2

 1.3 Why HSRA Costs Are Unnecessarily High 1-3

2.0 CRITICAL AND COSTLY HSRA PROGRAM SHORTCOMINGS **2-1**

 2.1 Lack of Sensible Risk Analysis 2-1

 2.2 Over-Inclusive Inventory 2-3

 2.3 Scope of HSRA Site Investigations 2-4

 2.4 Presumption of Drinking Water 2-8

 2.5 Presumption of Point of Exposure 2-10

 2.6 Bright-Line Presumption 2-11

 2.7 Penchant for Removal 2-11

 2.8 Source Material Presumption 2-15

 2.9 Compounding Effect 2-15

3.0 CONCLUSIONS **3-1**

4.0 RECOMMENDATIONS **4-1**

ATTACHMENT A Recommended Legislative Changes
 for Making HSRA Cost Effective...Still Protective

Making HSRA More Cost Effective...Still Protective

A White Paper Sponsored by the Georgia Industry Environmental Coalition

For consideration by the Joint HSRA Reauthorization Study Committee

EXECUTIVE SUMMARY

The Hazardous Site Response Act (HSRA) was enacted in 1992 to meet the important and necessary goal of cleaning up those sites in Georgia that "pose a threat to human health or the environment." This is a goal that conscientious business and industry supports without equivocation. At the same time, however, Georgia business and industry supports cost-effective methods for achieving this goal. Georgia business and industry welcomes the establishment of the Joint HSRA Reauthorization Study Committee and trusts that this paper is a helpful summary of first-hand experience with HSRA since 1992.

Since HSRA's inception, approximately 70% of the sites that HSRA has attempted to address have involved businesses and industries. Business and industry experience at scores of these sites has shown that the current HSRA program imposes rigid, inflexible compliance obligations that, in many cases, do not have a corresponding benefit to the protection of human health or the environment. This approach to administering the HSRA program threatens to add billions of dollars of unnecessary costs to the cleanups of Georgia sites, drain the Trust Fund, and hinder brownfield redevelopment. The HSRA program is now poised to take advantage of this experience to date and the experiences of other federal and state programs that share the same goal of protecting human health and the environment.

Georgia business and industry has identified eight critical shortcomings in the HSRA program that add substantial unnecessary costs:

1. ***The HSRA program uses presumptions that are not based on real-world scenarios of risk as a basis for setting the nature and extent of required cleanups.*** Rather than using realistic and sensible evaluations of the risks posed at a particular site, the HSRA program has established a set of assumptions that presume certain exposures and risks are present at every site even where no scientific or factual basis for such presumption exists.
2. ***The HSRA program has created an inventory of sites that is unreasonably expansive.*** EPD lists sites on the inventory often based on incomplete or inaccurate information, and then makes it difficult or impossible to efficiently remove a site from the inventory once it is listed, even if the responsible party can demonstrate that no risk to human health or the environment exists at the site.
3. ***The site investigations required by the HSRA program do not take into account either the actual risk posed by the site or the cleanup standards that will be invoked.*** As a result, responsible parties often spend hundreds of thousands of dollars on investigative studies, often chasing an elusive background concentration point that bears no real relation to risk, that has no cleanup significance, and that often stigmatizes adjoining properties and gives rise to needless litigation in the process.
4. ***The HSRA program imposes a regulatory presumption that all ground water in the State is drinking water.*** The HSRA program ignores the reality that many sites exist where the ground water (particularly the shallow ground water) is not used as drinking water and will not realistically be used as such in the future. This HSRA program presumption has the effect of forcing soil and ground-water cleanups to

expensive and often unnecessary extremes, because of a hypothetical exposure assumption created by regulatory fiat often with no factual or scientific basis.

5. ***The HSRA program imposes a regulatory presumption that every point on a site is a point of exposure.*** HSRA cleanup requirements are driven by calculated risk factors, but the HSRA program often will not accept realistic, site-specific, exposure assumptions to derive the risk factors. For example, unlike programs in other states, the HSRA program imposes a presumption that day-to-day, residential soil exposures will occur at all soil depths and even under buildings or pavements.
6. ***The HSRA program requires each and every point on a site to meet the calculated average cleanup standard.*** Even though the cleanup standards are based on average exposure concentrations, the HSRA program insists on using the average as a not-to-exceed, bright-line standard for cleanups that applies, not on an average basis across the site, but to each and every point at the site. This inappropriate application of the cleanup concentration term results in the removal of more soil at greater costs than necessary to achieve the cleanup goal.
7. ***The HSRA program imposes a preference for bulk removal over cost-saving alternative and innovative remedies.*** The most dramatic consequence of the HSRA program's demands in this regard is the substantial underutilization of engineering and institutional controls, as well as innovative remedial technologies which achieve protection of human health and the environment at costs far below removal or other cost-intensive remedies.
8. ***The HSRA program compounds these costly shortcomings by cumulative application.*** For example, the unrealistic assumptions in the risk calculation that increase the soil and ground-water volume subject to cleanup are often then compounded by the requirement for costly removal remedies.

Based on an informal, non-scientific, cost survey of sites on the Hazardous Site Inventory now undergoing remediation, it is not unrealistic to predict that the current HSRA program will ultimately result in expenditures for HSRA compliance on the order of \$5 billion. Review of HSRA's shortcomings suggests that a significant portion of this projected cost would not be necessary to achieve protection of human health and the environment. In fact, the cumulative effect of these costly shortcomings causes cleanups in Georgia to be from 1.5 to 10 times more expensive than cleanups at similar sites in other states.

Fortunately, the shortcomings mentioned above can be addressed through a limited number of legislative changes. Those recommended changes are reflected in Attachment A, a red-lined, amended version of the HSRA statutory language.

If effectively implemented, these recommended legislative changes will reduce pressure on the Trust Fund and encourage more brownfield redevelopment in communities across Georgia. Further, implementation of these changes will begin to ease the excessive financial burden that the current HSRA program places on business and industry, local governments, and individuals while still protecting human health and the environment.

1.0 INTRODUCTION AND BACKGROUND

In protecting its citizens from environmental hazards, government has an inherent obligation to do so in a manner that is no more costly or burdensome than is necessary to be protective. In short, prudent environmental laws, regulations and implementing policies will be widely viewed as being both protective and cost effective at the same time. This paper details and illustrates those aspects of the current HSRA program that beg for reform and presents specific recommendations for making HSRA more cost effective while still protective of human health and the environment.

HSRA, of 1992, was targeted at those sites in Georgia where past practices resulted in property contamination that poses a threat or danger to human health or the environment. However, without specific legislative language directing the Board of Natural Resources (Board) and the Environmental Protection Division (EPD) as to how this goal should be achieved, the Board adopted rules and EPD has evolved implementing policies that target some sites for expensive investigation and cleanup even where no real danger exists. Further, these same HSRA Rules and implementing policies often require use of unrealistic and exaggerated hypothetical exposure presumptions that dramatically overstate risks and result in cleanup requirements that are much more expansive and costly than are needed to be protective. Finally, the HSRA Rules and policies subtly distort the basic scientific concepts of site-specific and risk-based criteria while routinely rejecting the use of engineering and institutional control measures and innovative methods that are often accepted in other jurisdictions and offer a much more cost-effective means for protecting human health and the environment. Instead, the HSRA program often compels large-scale physical removal of soil and ground water, which is typically the most costly option for dealing with such sites.

The specific aspects of EPD's HSRA Rules and implementing policies mentioned above have given Georgia a superfund program that is widely seen as one of the most onerous and costly programs of its kind in the nation. The HSRA program is perfectly poised for reform; the stakeholders now have sufficient experience with the program to identify areas where changes are needed. The goal of the changes recommended in this White Paper is to make the HSRA program both protective and cost effective at the same time. The excesses of the current HSRA program aggravate not only the budget shortfall for the Hazardous Waste Trust Fund (Trust Fund) but also serve to discourage brownfield redevelopment and greatly burden businesses and local governments because these entities ultimately bear the real brunt of the HSRA program.

1.1 The Real Cost of HSRA

The responsibility for most HSRA projects to date has fallen upon Georgia's business and industry sector. While there is no formal accounting system for state-wide HSRA compliance costs, an informal poll of businesses and industries with HSRA sites on the Hazardous Site Inventory (HSI) found site costs commonly exceeding a million dollars and in some cases costing tens of millions. Even sites that require no corrective action at all can cost more than \$200,000 for HSRA investigations alone and investigation of sites that require corrective action can cost significantly more. Significantly, business and industry has poured a tremendous amount of money into complying with the HSRA program, yet relatively few sites (36 as of July 2001) have been certified and removed from the HSI. Most of these delisted sites were relatively small sites without ground-water remediation, and some were found to already comply without any remediation at all. Considering the number of sites now listed (533 as of July 2001 with more to come) and how few have actually been investigated and remediated to certify compliance for delisting, the money spent to date is but a small percentage of the ultimate statewide cost of HSRA compliance.

HSRA'S costs are unnecessarily high.

In contrast to the business and industry sector's experience, the Trust Fund has not yet experienced the full scope and real total cost of HSRA. Most of those sites addressed under the Trust Fund have been limited to the removal of abandoned hazardous wastes and contaminated soils, without complying, in many cases, with the expensive investigation process required of private parties, and without addressing ground-water contamination. These Trust Fund actions account for only a very small percentage of the overall costs of HSRA. Many of these and other Trust Fund sites will undoubtedly require substantial additional funding to complete the investigation and to remediate residual soil and ground-water contamination to comply with current HSRA standards for delisting.

Notably, municipal and county government HSRA sites are in a similar situation as the Trust Fund sites and have not yet felt the full brunt of HSRA's requirements and costs because they have generally not yet received Compliance Status Report (CSR) call-in letters from EPD.

Georgia business and industry has handled a wide range of sites, from those in rural areas to those in highly industrialized or developed areas of the State. As noted above, this sector is unique in that it has experience with the entire HSRA process, from listing to complete corrective action to delisting. With lessons drawn from this experience, the business and industry sector is now well positioned to evaluate the reasons for the unnecessarily high costs associated with HSRA compliance and to develop recommendations for making HSRA more cost-effective. As presented in this White Paper, the business and industry sector has identified specific ways to make HSRA more cost-effective without changing HSRA's commendable and important goal of protecting human health and the environment. With these improvements, unnecessary costs will be saved and Georgia's environment will still be protected.

1.2 HSRA Compliance Cost Projection

As of July 31, 2001, a total of 624 sites had already been listed on the HSI and 533 sites were still on the list. This means that some 91 sites ($624 - 533 = 91$) were delisted. Of these 91 delisted sites, approximately 55 were removed due to errors in listing in the first place while only 36 were delisted on the basis of a CSR submittal and certification of compliance with risk reduction standards.

Of the 36 certified-and-delisted sites, several did not require any remediation at all because the monitored soil and ground-water concentrations were already compliant with stringent HSRA standards for delisting. Those certified-and-delisted sites that did require some remediation consisted of straightforward soil excavation with little or no ground-water involvement. These initial delistings were relatively simple sites to deal with and thereby represent the low-end minimum costs for HSRA site compliance. An informal cost survey of the initial 36 delisted sites yielded 18 responses ranging from \$26,000 to \$2.2 million per site with a median site cost of \$175,000 and an average site cost of \$465,000. Even those sites that did not require any remediation experienced site costs of up to \$240,000 for a HSRA investigation and CSR just to prove that remediation was not needed. Clearly, some of these initial certified-and-delisted sites did not represent a real danger to human health or the environment and, therefore, did not warrant listing.

Another unscientific, cost projection survey of 12 more-representative HSI sites that are now in various stages of remediation gives HSRA site compliance costs ranging from \$1.4 million to \$62 million per site with a median cost of \$3.5 million and an average site cost of \$15 million. Most of these sites involve both soil and ground-water remediation. Even with such substantial expenditures, some sites may still not be able to meet the current HSRA compliance requirements for ground water.

Based on these limited initial HSRA cost surveys, it is not unreasonable to assume that the average per site cost for HSRA compliance and delisting under the current HSRA program requirements will be several millions of dollars. Just assuming an average cost of say, \$10 million per site for only 500 sites would result in a \$5 billion HSRA price tag.

Significantly, the excessive cost of HSRA is confirmed by comparing HSRA to other state Superfund programs. Georgia's HSRA program is the state equivalent of the federal Superfund program (CERCLA, 42 U.S.C. § 9601 et seq.), and is one of a large number of state "mini-Superfund" programs. As such, there are a wide range of state and federal programs that can be compared to the Georgia program because they share the same basic goals and tools for achieving these goals. Georgia's program, first implemented only seven years ago, is much younger than the federal program and most of the other state Superfund programs. These other programs have had the opportunity to develop over the years into more effective, efficient programs.

HSRA cleanups are as much as 10 times more expensive than cleanups at similar sites in other states.

One industry-sponsored confidential study compared the costs of cleanups in Georgia to the cost of cleanups of similar sites in other states. Sites were paired according to the nature and extent of the

impacts, the size of the sites, and general site characteristics (urban versus rural, industrial versus residential, etc.). Some of the comparisons were based on publicly available documents; others were based on confidential internal documents from the affected parties. In addition, a legal review was conducted of the statutory and regulatory structures governing those cleanups. Finally, the Analysis of State Superfund Programs: 50 State Study, 1998 Update (prepared by the Environmental Law Institute) was reviewed for general background as to how Georgia's program was similar to, or different from, programs in other states.

These studies revealed that the legislative purposes behind the federal and state superfund laws are substantially similar throughout the United States (i.e., protection of human health and the environment). Nevertheless, cleanup costs per site averaged 1.5 to 10 times more expensive in Georgia than in other jurisdictions. To illustrate why the cleanup costs in Georgia are so much higher, consider the following hypothetical. Imagine a one-acre site, with impacts exceeding the applicable risk reduction standard (i.e., EPD-established cleanup concentrations) to a depth of twenty feet. In many cases, the HSRA program's preferred remedy would be excavation of the material, the cost of which would be approximately \$4 million not including any waste treatment costs that might be required before disposal. Many other states, however, would allow a remedy consisting of a slurry wall (at \$8 per square foot), plus an impermeable cap, plus ground-water treatment, plus institutional controls, for a total cost of approximately \$500,000. In other words, with a simple site and simple remedies, the idiosyncrasies of the current HSRA program, all of which are discussed below, can easily lead to an eight-fold increase in cost.

1.3 Why HSRA Costs Are Unnecessarily High

There are several components of the current HSRA program that when taken together make HSRA requirements more burdensome and costly than necessary to be protective. These specific costly features of today's HSRA program are listed below and discussed in detail with recommendations for reform in the Chapters that follow:

- Lack of Sensible Risk Analysis
- Over-Inclusive Site Inventory
- Scope of HSRA Site Investigations
- Presumption of Drinking Water Exposure
- Presumption of Universal Exposure Point
- Bright-line Concentration Presumption
- Penchant for Removal / Rejection of Controls
- Over-Inclusive Source Material Presumption
- Compounding Multiple Factors

The above-listed features of Georgia's current HSRA program operate in combination to bring about investigations and corrective actions whose costs often greatly exceed those necessary to protect human health and the environment. Rather than being protective and cost effective, HSRA assessments and remedies too often prove needlessly expensive. Effective implementation of the few straightforward recommendations presented herein will: (1) ultimately reduce the amount of money necessary for the Trust Fund; (2) encourage more brownfield redevelopment across the State; and (3) ease the onerous financial burden that the current HSRA program places on business and industry, local governments, and individuals while still being protective of human health and the environment.

2.0 CRITICAL AND COSTLY HSRA PROGRAM SHORTCOMINGS

2.1 Lack of Sensible Risk Analysis

As discussed above, the HSRA program is substantially more onerous and costly than corresponding programs administered by the federal government or other states. Before turning to specific recommendations to address the most important shortcomings in the HSRA program, however, it is important to understand a common deficiency that cuts across all of these shortcomings: the failure of the HSRA program to focus its requirements on real risks to human health and the environment. Rather, the HSRA program is largely governed by uniform, arbitrary and inflexible standards that too often bear little or no relation to actual demonstratable risk using generally accepted, scientific principles. To understand this common deficiency, it is necessary to understand the basic science of environmental risk analysis.

The HSRA program does not focus its requirements on real risks to human health and the environment.

The HSRA Program Does Not Use A Flexible Approach to Risk Management Since the days of Paracelsus (1493 to 1541), we have known that “the dose makes the poison.” In other words, for a chemical substance to adversely affect human health or the health of animals and plants, there must be a sufficient level of exposure and resulting dosage of a substance to cause an adverse effect. If such an exposure and dosage does not occur, there is no ill effect.

The degree of health risk posed by a chemical substance in soil, ground water, or any other media depends upon three independent but related factors:

- the inherent potency or “Toxicity” of the chemical substance;
- the representative “Concentration” of the substance in the media of interest; and
- the amount of “Exposure” to the contaminated media and resulting dosage of the substance.

In simple terms, this can be expressed as an equation:

$$\text{Risk} = \text{Toxicity} \times \text{Concentration} \times \text{Exposure}$$

This basic risk equation means that by reducing toxicity, concentration, or exposure to zero, risk automatically goes to zero. Similarly, by controlling and limiting any combination of these three basic risk factors, risk can be managed and controlled to acceptable safe levels for protection of human health and the environment.

Environmental professionals often use a flexible approach to risk reduction, using whatever combination of techniques is appropriate to achieve protection of human health and the environment. The toxicity of some substances can be reduced or eliminated by physical, chemical, or biological treatment of the contaminated media to yield non-toxic end products. The concentrations of contaminants can also be reduced through treatment or by physical removal (e.g., soil excavation, vapor extraction, ground-water extraction) of the contaminated media. Likewise, exposures to contaminated media can be reduced or eliminated by the use of engineering control measures (e.g., exposure barriers, media containment, solidification) and/or institutional controls (e.g., codes of law, zoning, easements, deed restrictions).

From a purely risk-based, scientific and engineering viewpoint, then, the challenge is to select the lowest-cost combination of removal, treatment, and control measures that protects human health and the environment. Removal measures are typically much more costly to implement than exposure control measures, but are often the best choice for exposed wastes and relatively small volumes of contaminated soils that are readily accessible. Conversely, exposure control measures are often the most cost effective and pragmatic approach for risk reduction when access to the contaminated media is difficult, concentrations are relatively small, and/or volumes are relatively large. Focusing on removal requirements without being mindful of (i) the actual risks associated with the contamination, and (ii) whether control measures can suitably address such risks, will necessarily lead to significant unnecessary cleanup costs with no corresponding benefit. This is exactly what has happened in the HSRA program.

Before turning to specific examples of the shortcomings in the HSRA program, it is important to realize that nothing in the HSRA statute inherently requires this outcome. In setting forth the legislative intent and declaration of policy behind HSRA, the Georgia legislature provided that “[i]t is declared to be the public policy of the State of Georgia ... to require corrective action for releases of hazardous wastes, hazardous constituents and hazardous substances ... into the environment that may pose a threat to human health or the environment.” O.C.G.A. § 12-8-91(a) (emphasis added). The legislature further authorized the Board to promulgate (and modify and amend) rules governing “corrective action for releases of hazardous wastes, hazardous constituents and hazardous substances into the environment that pose a present or future danger to human health or the environment.” O.C.G.A. § 12-8-93(a) (emphasis added).

Pursuant to this mandate, in 1994, EPD crafted and the Board adopted the Rules. Ga. Comp. R. & Regs. r. 391-3-19-.01 et. seq. These HSRA Rules establish procedures for identifying hazardous sites, listing such sites on the HSI, developing cleanup criteria, and implementing corrective action. In particular, the Rules create the following five types of cleanup standards (Risk Reduction Standards or RRSs) that govern the extent to which a site must be remediated.

- Type 1 - default residential property standards
- Type 2 - site-specific residential property standards
- Type 3 - default non-residential property standards
- Type 4 - site-specific non-residential property standards
- Type 5 - standards for the use of engineering and institutional controls

While the HSRA Rules’ RRSs would seem at first to allow parties to address the site-specific dangers and threats to the environment at their particular sites, it has become evident, after more than seven years of implementing these RRSs, that they prescriptively result in an overly conservative approach that mandates removal without regard to the ability to control risk in less costly alternative ways.

Moreover, the HSRA program’s application of the Rules has limited the options available within the risk equation (most often by ruling out exposure-control options) so that the cost of risk reduction is needlessly inflated. Although the ways in which this failure to consider real risks will be addressed in detail in the sections that follow, it is useful to preview some of those shortcomings to see how they repeatedly incorporate this single, underlying shortcomings.

Presumption of Drinking Water Exposure The HSRA program has taken the position that, when developing site-specific factors, one must assume that the most contaminated ground water at every site will be ingested by humans as their direct source of drinking water. This assumption, e.g., that a hypothetical site occupant will drink two liters of the most contaminated ground water on a daily basis for 30 years, simply ignores the reality that many sites exist in areas where the ground water (particularly the shallow unconfined ground-water zone) is not used for drinking water and will never be used as such in the future. In fact, in some areas, the shallow ground-water’s natural setting or condition effectively precludes its use as drinking water. In other cases, local ordinances prohibit use of ground water and mandate connection to municipal water supplies. In other instances, the HSRA program’s assumption ignores other institutional controls that can serve to limit human exposure to ground water where it is impractical or impossible to return all ground water to pristine (drinking water) conditions. This drinking water presumption by the HSRA program has the effect of assuming an exposure value in the relevant risk equation, solely by regulatory fiat and with no scientific basis (or legislative direction). This results in dramatically over-conservative ground-water and soil cleanup standards that do not reflect the actual risks associated with particular sites.

Presumption of Soil Exposure The risk equations that set soil cleanup standards are based on average daily exposures over prolonged periods of time (often an entire lifetime). In most cases, however, the HSRA program has taken the position that every cubic inch of soil must meet the calculated risk standard, even if (1) exposure to the soil is practically impossible (e.g., at significant depth or beneath engineered structures), (2) the average exposure concentration is well below the peak level, or (3) the calculated exposures can occur only within limited portions of the site. For example, the HSRA program applies its residential soil standards to soils at all depths, making the improbable assumption that residents are exposed to the deep subsurface soil every single day. In contrast, other jurisdictions

apply these standards only to the top few feet of soil that residents might routinely encounter. Similarly, the HSRA program applies its exposure assumptions to soils located anywhere, even beneath buildings and other permanent structures.

Net Effect of These Presumptions As will be shown below in more detail, requiring risk-based cleanups without a sensible approach to the underlying risk equation will inevitably lead, as it has in the case of HSRA, to extravagant, wasteful, and even irrational cleanups that often go far beyond what is necessary for protection of human health and the environment.

The HSRA program should permit reasonable, site-specific exposure factors in the development of cleanup standards. More specific examples of the changes needed are discussed in the sections below.

2.2 Over-Inclusive Inventory

Section 12-8-97 of HSRA requires EPD to publish an annual inventory (the Hazardous Site Inventory or HSI) of sites where there has been a release of a "reportable quantity" of hazardous materials.

As of July 2001, there were already 533 sites listed on the Georgia HSI and it continues to grow. This can be compared, for example, to 1,236 sites on the federal "National Priorities List," of which only 14 are in Georgia. This disparity reflects an overly expansive HSRA program definition of what sites present a threat or danger to human health or the environment.

An impediment to more cost-effective implementation of HSRA is the process by which EPD determines whether a site is placed on or removed from the HSI. In many cases, this process results in sites being inappropriately listed on the HSI, which, in turn, results in diversion of limited resources to sites that do not pose a significant threat to human health or the environment.

There are two ways a site may now be listed on the HSI. Pursuant to Georgia Rule 391-3-19.05(1), a site will be listed if the Director determines: (i) that a release exceeding a reportable quantity has occurred; or (ii) that a release otherwise poses a danger to human health or the environment. Whether a release exceeding a reportable quantity has occurred is determined by applying the Reportable Quantities Screening Method (RQSM) set forth at Appendix II to Chapter 391-3-19. Application of the RQSM is governed by EPD's February 10, 1994, Guidance Manual for the RQSM. (However, this Guidance Manual was not promulgated under a rule-making process and has never been subject to formal public notice and comment.)

A site may be removed from the HSI in one of two ways. Pursuant to Georgia Rule 391-3-19.05(4), a site will be removed from the HSI only if: (i) the Director determines that there was not a release that either exceeded a reportable quantity or posed a danger to human health or the environment at the time of listing (i.e., if the site was erroneously listed); or (ii) the Director determines that the site meets applicable RRSs and, when required, the site owner has filed the requisite deed notice.

A principal problem with the HSI listing process is its susceptibility to decisions based upon incomplete or inaccurate data and assumptions, even where such information may be reasonably obtained and made available by interested parties. Site listing decisions are often made before all relevant information is available or before significant details are discovered, such as released quantities, data validity, or ground-water flow patterns. The RQSM method attempts to address this problem by establishing certain presumptions. There are default values for such factors as toxicity, release quantity, and ground-water flow. However, in many cases, these default values bear little or no relation to actual site conditions and often vastly overstate the actual risk posed by the site. Once the site is listed, the full-blown HSRA process occurs, at great expense, without regard to the site's low risk, even where low risk may be acknowledged by EPD.

Sites are listed on the HSI without adequate notice to potentially responsible parties.

For example, with respect to ground-water flow, the distance to a well or spring is measured as the shortest distance along the presumed flow path, from a known location of the regulated substance to

a well or spring. However, for those sites where ground-water flow direction has not been determined, measuring the shortest distance to any well or spring can result in a site being placed on the HSI by virtue of its relation to a hydrologically up-gradient or cross-gradient well or spring. Of course, an up-gradient or cross-gradient well or spring is not a possible receptor for contamination. The same can be said for wells located in physically separate or deeper confined aquifers.

The RQSM default values and assumptions are a substitute for information that may be readily discoverable by interested parties. Accordingly, the HSI listing process should incorporate an opportunity for interested parties to provide information and comment regarding a proposal to list a site on the HSI.

EPD has interpreted the HSRA Rules to require a full site investigation (i.e., a Compliance Status Report or CSR) even where EPD acknowledges after listing a site that certain aspects of the RQSM scoring were in error. This results in perhaps the most egregious inefficient use of resources, as a site that all parties concerned agree should not have been scored nonetheless requires resource-intensive investigation work just to prove the site should not have been listed in the first place. The statute should be amended to clarify that this result is not intended and the listing of a site on the HSI should be immediately appealable. Likewise, it should be possible to remove a site from the HSI whenever the HSRA release no longer exceeds a reportable quantity and does not otherwise pose a danger to human health or the environment.

Erroneous listings are difficult or impossible to correct.

As indicated earlier, the HSRA program relies upon the Guidance Manual for the RQSM, which was never subjected to public notice and comment. The RQSM is of little use without the Guidance Manual, but the Guidance Manual has deficiencies because it has never withstood public scrutiny and comment. For example, both the guidance and the RQSM itself fail to give proper weight to contaminant isolation. Where there has been a release to soil below the footprint of a building, thus substantially eliminating migration potential, the RQSM only accounts for this by assigning a low containment score to the site. Worse yet, if the building is accessible to the public, or if the building is close to a residential structure, the current method of RQSM scoring will be significantly elevated despite the fact that little or no possibility for exposure exists at the site. The HSRA statute and the RQSM scoring and guidance should be amended to account for site-specific information. Also, the RQSM guidance should be subjected to public comment.

The HSI listing process has never been subjected to public review.

Finally, in light of the large number of sites already on the HSI and the steady increase in the number of sites being added, the Legislature should consider directing the Board to reevaluate the RQSM listing thresholds or otherwise limit the number of sites that may appear on the HSI at any time.

While no such specific legislative change is recommended herein, it is suggested that the concept of limiting the number of sites on the HSI be seriously considered as a way to focus on those high priority sites that pose a real danger to human health or the environment.

2.3 Scope of HSRA Site Investigations

In addition to the costly excesses of HSRA RRSs and remediation requirements, the HSRA program also mandates certain investigative activities that can add substantial cost without corresponding benefit. Areas where streamlined and more cost-effective investigation practices are appropriate are discussed below.

More sensible site investigations are needed.

For example, at one site listed on the HSI, initial site investigation activities identified a naturally occurring metal at a level amounting to .026 parts per million (26 parts per billion) above the background concentration. By contrast, the most stringent RRS (established by the HSRA program to eliminate any significant risk for residential use) is 1.93 parts per million (1930 parts per billion). In other words, a naturally occurring metal was detected at a level more than one order of magnitude

lower than the most stringent RRS established by the HSRA program. Moreover, this location was selected for sampling because of its close proximity to potential source material. Still, because of the requirement to delineate all releases to background concentrations, the responsible party was required to expend significant resources to find background, even though the investigation data showed no significant risk was posed by the trace concentrations. Such a result defies common sense and demonstrates the often needless costs the overly prescriptive HSRA program imposes on the property owner and other parties.

Under current HSRA Rules, responsible parties are required to delineate the extent of contamination until they reach background concentrations. However, background concentrations are generally irrelevant to the scope of remediation under established risk-based cleanup standards. This can significantly drive up investigation costs. This inefficiency is codified in the current HSRA Rules as follows:

The current program requires investigation where no significant risks are present.

“Satisfactory evidence of a complete definition of the horizontal and vertical extent of soil [and ground-water] contamination shall consist of an appropriate number of data points at sufficient locations with concentrations at background concentrations. An acceptable determination of background concentrations shall be made from samples that are representative of soil conditions not affected by a release of a regulated substance.”

DNR Rule 391-3-19-.06(3)(b)2. See also DNR Rule 391-3-19-.06(3)(b)3. (for ground water).

For all sites listed on the HSI, the HSRA Rules require responsible parties to conduct a site investigation and submit a CSR. To develop the CSR, the parties must, among other things, determine the horizontal and vertical boundaries of the soil and ground-water contamination. See DNR Rule 391-3-19-.06(3)(b)2 (soil) and 3 (ground water). Under the HSRA Rules, this delineation process must extend until background concentrations are encountered, i.e., where soil or ground-water “conditions are not affected by a release of a regulated substance.” DNR Rule 391-3-19-.06(3)(b)2.

This requirement exists in parallel to the risk-based cleanup standards specified in the Rules for remedial actions. The cleanup standards require that soil or ground water be cleaned up to the RRSs. The RRSs “will, when adequately carried out, assure adequate protection of human health and the environment.” DNR Rule 391-3-19-.07(3).

When viewed together, the investigation and cleanup requirements demonstrate a basic and costly flaw in the HSRA program. Any adequate cleanup requirements must protect human health and the environment. However, prudent investigation requirements should not create the additional burden of identifying contamination that falls below levels that do not threaten human health or the environment. In light of the fact that the Rules do not require parties to cleanup property beyond risk-based levels, requiring parties to investigate the subject site and nearby properties to establish background concentration imposes a costly burden without adding to the efficacy of the cleanup process. Further, this delineate-to-background requirement needlessly expands the HSRA site size, impacts more property owners, and can give rise to unnecessary litigation in the process.

The basic approach established by HSRA suggests a policy of prioritizing risk and allocating resources efficiently. For example, as EPD has explained in its 2001 Report on the Hazardous Site Response Program, industrial-based RRSs are less stringent than residential-based RRSs. This difference reflects the reduced health risk presented by impacts to industrial properties as compared to impacts to residential properties. Allocating resources according to risk makes more resources available to address the greatest threats to human health and the environment. In EPD’s words, “resources are not wasted on cleaning up contamination that does not pose a threat.” Cleaning Up Georgia’s Hazardous Sites, EPD, January 2001.

Following this concept, the Rules should not require investigation where no cleanup is warranted. For example, under Superfund, the U.S. Environmental Protection Agency (EPA) has established Soil

Screening Levels (SSL) to identify areas needing additional investigation at sites listed on the National Priority List (NPL). The SSL are risk-based concentration criteria which can “save resources by helping to determine which areas do not require additional Federal attention early in the process.” Soil Screening Guidance: User’s Guide, EPA, 1996.

Under HSRA, however, responsible parties are required to expend resources to delineate suspected contamination to background levels of contaminants, even in areas where no remediation activity is warranted. An alternative approach, modeled after the risk-based approach accepted by EPA, would ensure that resources are allocated to investigating the areas presenting the most risk.

Some may argue that delineation to background ensures identification of discrete hotspots and areas of contaminant migration. However, the Rules already require site-specific analysis geared toward identifying all areas of contamination. Responsible parties must analyze site uses and process methods (by establishing a source chronology), track potential migration pathways, and identify potential human or environmental receptors. DNR Rule 391-3-19-.06(3)(b). Such analysis must be presented to and approved by EPD. Where uncertainty prevails, additional targeted investigation can address residual concerns. Under these circumstances, requiring parties to routinely delineate to background concentrations adds inefficiency and excessive costs to the site investigation process.

Analysis of site use and migration pathways more accurately identifies areas needing remediation.

Another costly consequence of delineating to background is the extent to which neighboring properties are unnecessarily brought into the investigation and HSRA site definition. Where risk-based standards indicate an unacceptable risk to neighboring properties, further investigation and remediation is absolutely necessary. However, where risk-based standards indicate that contamination does not pose a significant risk to adjacent properties, delineation to background can often needlessly associate adjacent properties with the contaminated site, potentially resulting in that property being listed on the HSI and being subject to the associated stigma. Moreover, needless resources must be spent negotiating access agreements and expanding site investigation activities.

Over-inclusive site investigation needlessly stigmatizes adjacent properties.

Even if delineation to background concentrations were worth the increased site investigation costs, the delineation scheme itself compounds the cost increases.¹

Unrelated anthropogenic (common man-made) sources bias the site investigation process.

Furthermore, because the background determination inherently involves very low concentrations of contaminants, any existing anthropogenic (common man-made) sources can adversely affect the determination. For example, air emissions (e.g., automobile exhaust) or storm water runoff can indicate “false positives” in shallow soil samples and needlessly complicate site investigations. Because of the requirement to delineate to background, these realities inject unwarranted uncertainty into site investigations and increase costs.

Solution #1: Follow the Risk

In light of the increased costs and minimal benefits generated by the requirement to delineate plume size to background concentrations, a better practice is one that more closely links site investigation to the risks presented by the contamination. One method for solidifying this link is to base investigation

¹ EPD has not provided guidance as to what it considers appropriate background values for soil contamination. Nor has EPD set default background levels based on accepted trends in soil conditions. This creates a moving target and makes it difficult for parties to determine the end point of their site investigations.

activities on risk-based cleanup standards. Where more risk is present, more investigation is warranted; where less risk is present, less investigation is warranted. This ensures efficient allocation of resources, allows parties to address problem areas more quickly, and reduces undue complication of the investigation process. This approach allows parties to concentrate resources on actual risks instead of regulatory benchmarks, which often do not further protection of health and the environment.

Solution #2: Allow Use of Cost-Saving, Site Investigation Techniques

Another area in need of reevaluation is the HSRA program's resistance to non-traditional site investigation techniques which limits the use of legitimate, cost-effective methods. In the site investigation context, parties must rely on data generated from site-specific field sampling programs. Many sampling points are often required to fully develop an accurate profile of the type and extent of contamination. In these cases, requiring conventional permanent monitoring wells, especially where sampling may not be needed in the future, can result in inefficient use of available resources.

An example of a proven, cost-effective alternative is direct push technology (DPT). Direct push technology is an alternative method for drilling wells to take soil and ground-water samples. In January of 2001, the U.S. Navy performed a study comparing DPT to traditional hollow-stem auger (HSA) drilled wells. The study compared DPT and HSA well data for concentrations of methyl tertiary butyl ether (MTBE), several geochemical parameters, and water level.² MTBE is a water-soluble compound added to gasoline to reduce air emissions from automobiles.

The most significant factors affecting results were depth range and sample date, not well type. There were no strong systematic variations in concentrations based on well type, including non-pack wells (similar to single-point DPT samplers). Water level variability was relatively low.

In terms of cost, DPT wells are significantly less expensive than HSA installations. In the U.S. Navy study, technicians averaged installation of six DPT wells per day and four HSA wells per day. Assuming labor costs are \$900/day (not specified in study), each DPT well cost \$150 and each HSA well cost \$225. Assuming each well can be developed, purged, and sampled in three hours at a labor cost of \$40 per hour, the total labor costs for well installation and one-time sampling is approximately \$270/DPT well and \$345/HSA well.

Further and more substantial cost differences are associated with the generation of solid and liquid waste from the installation activities. DPT wells generated no waste from soil cuttings, whereas HSA wells generated $\frac{3}{4}$ of a drum. DPT wells generated 20-30 gallons of decontamination and development water, versus 90 gallons generated by HSA wells. These waste volume differences alone can increase the cost of an HSA well by \$300 or more compared to DPT.

In light of the comparative reliability, simplicity, and cost-effectiveness of DPT installation, the use of DPT can significantly reduce the amount of resources required for site investigation. Furthermore, because DPT sampling can generate more wells per mobilization, a given time period of time spent in the field can yield a more accurate profile of conditions at the site. DPT does have limitations; for example, DPT may not be appropriate for unfiltered sampling of ground water for metals that requires low turbidity samples. However, in light of the potential benefits, consistent with appropriate methodology and tool selection, DPT can provide significant cost savings without jeopardizing reliability of data, and EPD should more freely accept this technology.

² Well construction for both types included two and five foot screens at varying depths in several clusters in two areas. Each cluster contained both well types with varied configurations: filter packs designed to ASTM specifications; filter packs conventionally employed by installers (0.01 inch slotted screen surrounded by 20 to 40 mesh sand); DPT wells without filter packs. The data was analyzed to determine what factors (screen depth, well construction, etc.) had the most effect on the results.

2.4 Presumption of Drinking Water

Perhaps the most inefficient aspect of the HSRA program's implementation of the RRSs is its presumption that all ground water in the State of Georgia, wherever located, is a potential source of drinking water. EPD has adopted this policy informally but appears to implement it consistently at all HSRA sites. While the RRSs are designed, pursuant to the legislative mandate, to address site-specific dangers to human health and the environment, the HSRA program has taken the position that, when developing site-specific factors, one must assume that a hypothetical residential person will drink two liters of the most contaminated site ground water on a daily basis for 30 years. As pointed out above, this assumption simply ignores the reality that many sites exist in areas where the ground water (particularly the shallow water table zone) is not used for drinking water and will never be used as such in the future. In fact, in many areas, the ground-water's natural setting and condition effectively precludes its use as drinking water. In other cases, local ordinances prohibit use of ground water and mandate connection to municipal water supplies. In other instances, this assumption ignores other institutional controls that can serve to limit human exposure to ground water where it is impractical or impossible to return an aquifer to pristine (drinking water) conditions.

EPD's HSRA program presumes that all ground water wherever located is a potential source of drinking water and must therefore be remediated to RRSs reflecting this potential use.

This presumption by the HSRA program has the effect of assuming an exposure value in the site specific risk equation, solely by regulatory fiat, with no scientific basis and no legislative mandate. This results in dramatically over-conservative ground water and soil cleanup standards that do not reflect the actual risks associated with particular sites. As discussed in detail below, this HSRA program is not scientifically supportable, is not based on any mandate under the HSRA statute, and ultimately results in public and private funds being wasted on excessive, expensive remediation.

EPD, through the Georgia Geologic Survey, has adopted a ground-water plan, entitled "A Ground-Water Management Plan for Georgia: Georgia's Comprehensive State Ground-Water Protection Plan" (the Ground-Water Plan). The Ground-Water Plan was approved by EPA in 1997 and was published by EPD in 1998. In the Ground-Water Plan, EPD specifically provides that cleanup levels may be less stringent than drinking water standards upon an evaluation of site-specific factors such as "likelihood of potential use, risks, cost, technological practicality, and negative environmental factors (e.g., dewatering of aquifers)." Ground-Water Plan at 4-19. The Plan further provides that EPD may approve higher (i.e., non-drinking water) standards "in low risk areas not proximal to public and private sources of drinking water." id. Thus, EPD's own Ground-Water Plan specifically recognizes that cleanup standards, such as RRSs, should be developed based on a site-specific assessment of the actual exposure to the ground water, the cost to remediate the ground water, and the technical practicability of implementing an aggressive ground-water remedial system.³

The HSRA program's all-ground-water-is-drinking-water position also fails to recognize the

The HSRA program's ground-water use presumption is inconsistent with EPA'S position at federal superfund sites.

³ Significantly, the federal district court for the Northern District of Georgia addressed this issue under CERCLA in Southfund Partners III v. Sears, Roebuck and Co., 57 F. Supp. 2d 1369 (N.D. Ga. 1999). In that case, Southfund purchased property in Georgia from Sears that Southfund later discovered to be contaminated with chlorinated solvents. Southfund implemented a ground-water remediation and sued Sears under CERCLA to recover the costs of this remediation. Applying CERCLA, the court held that Southfund could recover its ground-water remediation costs only if it could show "that the costs were incurred in response to a threat to human health or the environment." 57 F. Supp. 2d at 1378. The court held that the ground-water remedy was not necessary because there was no evidence "that anyone drinks the contaminated water from the site or that the ground-water flows into underground sources of drinking water and contaminates them." This is a very disturbing conclusion: cleanups that are required under HSRA are so wasteful as to be non-compensable under superfund.

important scientific information that has been developed through twenty years of implementing the federal Superfund program. EPA has learned that, due to complex hydrogeology and contaminant characteristics, the technology simply does not exist to achieve drinking water standards in many cases. See Presumptive Response Strategy and Ex-Situ Treatment Technologies for Contaminated Ground Water at CERCLA Site Final Guidance, October 1996. The EPA Final Guidance explains this further:

“The most important lesson learned during implementation of Superfund and other remediation programs is that complex site conditions are more common than previously anticipated, including those related to the source and type of contaminants as well as a site’s hydrogeology. As a result of these site complexities, restoring all or portions of the contaminant plume to drinking water or similar standards may not be possible at many sites using currently available technologies.”

USEPA Final Guidance at 3.

Similarly, in 1994, the National Research Council presented a report to Congress that evaluated the effectiveness of ground-water cleanups across the country under both state and federal programs. Alternatives for Ground-Water Cleanup, National Research Council (1994). In this Report to Congress, the Council made ten key recommendations to Congress, the second of which provided: “All regulatory agencies should recognize that ground-water restoration to health based goals is impracticable with existing technologies at a large number of sites.” The Executive Summary provides: “There is almost universal concern among groups with diverse interests in ground-water contamination -- from government agencies overseeing contaminated sites to industries responsible for the cleanups, environmental groups representing affected citizens and research scientists -- that the nation might be wasting large amounts of money on ineffective remediation efforts.” Council at Executive Summary, p. 1.

The conclusions of both EPA, specifically, and the National Research Council, more broadly, suggest that it is impractical to approach every site with a presumption that all the ground water should be, or can be, remediated to drinking water criteria. Rather, these reports conclude that agencies should consider actual anticipated use (i.e., the exposure element of the risk equation), taking into account technical feasibility and cost-benefit analyses as well as institutional controls, when developing site-specific cleanup goals.

Unfortunately, however, the HSRA program has elected to disregard EPD’s own Ground-Water Plan and the lessons learned by EPA and many state agencies, and instead has adopted the position, essentially, that none of these site-specific criteria can be considered with respect to reasonably expected ground-water exposure at a site. Instead, the HSRA program assumes that even if ground water is, in fact, not usable or, if its use is effectively precluded, the party must nonetheless assume that the most contaminated site ground water will be ingested as drinking water on a daily basis by a hypothetical person. EPD’s presumption that the ground water at every site will be ingested by humans results in so-called “site-specific” RRSs that, in reality, are not at all site-specific and that do not realistically reflect the actual risks at the site. Instead, regulated parties must in many instances implement expensive ground-water remedies that are unnecessary to address the dangers posed by the site in order to comply with the HSRA program’s presumption of direct drinking water use of the contaminated site ground water. Similarly, EPD will require parties to achieve these RRSs even where the cost of such remediation is exorbitant and highly inconsistent with any benefits achieved by implementing such restrictive standards. This result is not supported by the original intent of the legislature and the cause of a significant and growing waste of financial resources to the public and private sectors.

As a related matter, the HSRA program’s unreasonable presumption that all ground water is drinking water also increases the cost of addressing soil contamination at HSRA sites. The soil RRSs require parties to evaluate the potential contribution of soil contamination to the underlying ground water using a method approved by EPD. The Type 2 and Type 4 site-specific, soil RRSs require that the parties comply with the lower of several standards,

The HSRA program’s unreasonable ground-water use presumption also affects the cost of soil cleanup.

one of which is the concentration at which the soil will not cause the underlying ground water to exceed Type 2 or Type 4, ground-water RRSs, respectively. Because EPD requires the Type 2 and Type 4 ground-water RRSs to assume drinking water ingestion occurs, these standards are often unreasonably low. In turn, soil RRSs are commensurately overly conservative. This results in a greater volume of soil exceeding calculated RRSs and gives rise to excessive soil remediation costs. Finally, this increased volume of non-compliant soil further aggravates problems associated with the HSRA program's preference for media removal over media control measures (as discussed in more detail in Section 2-9).

This problem with the HSRA program's implementation of the RRSs could easily be remedied by a legislative mandate that, while ground water is an important resource in the State of Georgia (and business and industry agrees that it is), EPD must consider other factors in assessing the site-specific risks at each HSRA site, including, but not limited to, the reasonable likelihood that the site impacted ground water will be used as drinking water (taking into account hydrogeology, drinking water sources, local ordinances, and deed restrictions), the use of deed restrictions to ensure that existing use patterns continue, natural attenuation processes, costs and technical impracticability (cost-benefit analysis). This approach to ground-water remediation would be consistent with the federal approach and would result in a substantial cost savings to the public and private sectors without jeopardizing protection of human health or the environment.

The HSRA statute should mandate consideration of the reasonable likelihood that ground water will be ingested.

2.5 Presumption of Point of Exposure

The HSRA program assesses risks and requires remedies based on a presumption that every point within the site is a potential point of exposure and must be remediated to the applicable exposure-presumptive cleanup standards. For example, at a large industrial site with a contaminated former manufacturing area but acres of surrounding uncontaminated property, the HSRA program requires that all ground water meet the applicable drinking water criteria including the ground water immediately beneath the manufacturing area. The HSRA program takes the position that a site does not meet the RRSs unless the entire ground-water plume meets such standards, even where no exposure to the ground water is occurring or could occur. This all-points exposure presumption unreasonably increases the cost of HSRA cleanups.

Human health and the environment can be protected at much less cost if the point of compliance is at or near the property boundary, rather than every point within the site. For a large contaminated site, containment and/or treatment of the ground water before it exits the property may be far less expensive than a remedy which demands cleanup to drinking water standards at every location throughout the entire property.

EPA and many other states allow remediation based on specific points of compliance, at which ground-water standards must be met. Use of designated points of compliance typically requires that ground water meet the applicable standard before leaving the site boundaries or before entering a zone where the uncontrolled contamination could create exposure and therefore pose a risk to human health or the environment. The recently revised Texas program, for instance, provides that points of exposure are identified and that the site must demonstrate compliance with the applicable standard at those selected points. The location of the points of exposure for a ground-water plume depend, in part, upon the current and anticipated land use; if the property is subject to zoning or a governmental ordinance, the land use is assessed based on the zoning classification.

With regard to soil contamination, the HSRA program requires that soil at every point within the site meet the cleanup standard, even when the contaminated soil is well below the ground surface and, therefore, cut off from exposure to any receptor. The HSRA program has even required soil removal where the only samples in excess of the site-wide average cleanup standard were beneath a building and therefore not posing any risk of exposure. Most other jurisdictions apply exposure assumptions only to the top few feet of soil and often do not apply site-specific, exposure assumptions to contaminants located beneath buildings or other permanent structures.

Rather than insisting that every point on a site poses a risk of exposure, the HSRA program should consider the actual exposure presented. For ground-water contamination under a manufacturing facility hundreds of feet from the property boundary, in an area where the subject ground water has no reasonable potential for drinking water use, and poses little or no risk, the HSRA program should take this into account in its requirements for remediation. Likewise, contaminated soil beneath several feet of clean soil or below a paved parking area poses little or no real risk.

2.6 Bright-Line Presumption

The HSRA program has borrowed heavily from EPA's risk assessment methods but has misapplied those methods by insisting the risk reduction concentration standard derived from the calculations is a bright-line cleanup standard, rather than a site-wide average cleanup number.

Soil cleanup concentration goals established by health professionals and toxicologists are derived in the form of average soil concentrations over the area of soil exposure. These goals are based on the results of a scientific risk assessment process that assumes random exposure of an individual over the exposure area. The potential exposure concentration for this individual is therefore represented by the soil concentration averaged over the exposure area. Because the cleanup concentration is based on an exposure area average, the soil compliance and remediation requirements should likewise be based on achieving an exposure area average. Under the current HSRA program, however, the average cleanup concentration is instead used as the single point not-to-exceed, or "bright-line" concentration for every single point across the entire site. This HSRA program misuse of the average cleanup concentration as a single point bright-line cleanup requirement often results in the removal of more soil at greater costs than necessary to achieve the cleanup goal.

2.7 Pentchant For Removal

As a result of the overly-conservative elements of the HSRA program discussed above, including the presumption that all ground water is drinking water, the unwillingness to accept a real site-specific risk assessment to determine cleanup levels, and the requirement that average cleanup levels must not be exceeded at any point within the site, HSRA has devolved to a programmatic presumption that media removal is the preferred universal remedy. The HSRA program's strong bias toward soil excavation and extraction remedies for ground water ignores the availability of more practical, cost-effective remedies which are also protective of human health and the environment. There is no doubt that soil excavation and extraction of ground water are appropriate in certain circumstances. However, these methods are very expensive. When applied in a presumptive manner to HSRA sites throughout Georgia irrespective of the real risk, the result is remedies that are needlessly expensive. The HSRA program should accommodate use of the full spectrum of alternative, cost-saving remedies which have been implemented under the supervision of EPA and other states throughout the United States. In the past 20 years, scientists, engineers, lawyers, and regulators have learned that remedies other than soil excavation and ground-water extraction can be effective at much less cost.

The HSRA program's penchant for removal and resistance to innovative remedies contributes greatly to the unnecessarily high cost of HSRA remediations.

Key factors contributing to inflated remedial costs under HSRA

- Preference for removal over other available remedial alternatives

The HSRA program generally requires removal remedies (the excavation and off-site disposal of the contaminated soil and extraction of ground water) for not only source materials, but also for non-source contaminated soil and ground water rather than allowing other cost-saving alternatives. This is an extremely conservative and inefficient approach to remedy selection and results in the expenditure of remedial costs an order of magnitude greater than costs associated with other remedies.

- Resistance to Innovative Remedies

Relying on the HSRA Rules, the HSRA program has shown a strong resistance to innovative, cost-effective remedies and has instead, as noted above, defaulted to the use of removal technologies to achieve compliance with RRSs. This approach ignores the extensive development in the last five to ten years of highly innovative, effective, yet reasonably priced, remedial technologies. These technologies include phytoremediation, enhanced bioremediation, iron reactive technology, thermal desorption, co-incineration, solidification, and monitored natural attenuation.

In particular, the HSRA program should allow wider use of monitored natural attenuation of ground water (i.e., monitoring to ensure the concentrations naturally reduce) as a remedy. USEPA recognizes that in certain circumstances, monitored natural attenuation is the appropriate ground-water remedy. Use of Monitored Natural Attenuation at Superfund, RCRA, Corrective Action and Underground Storage Tank Sites, US EPA OSWER Directive 9200.4-17P. (April 1999). The National Academy of Sciences has agreed that monitoring ground-water contamination is an appropriate method to address the risk in instances where the ground-water contamination can be reasonably expected to attenuate naturally and where no significant risk to drinking water or surface water is presented. USEPA and other states have recognized that in many instances, monitored natural attenuation is just as effective, and in some cases just as fast, as a pump-and-treat remedy, at far less cost. Similarly, other innovative remedies are much more common in other jurisdictions.

- Inflexibility in applying Type 5 RRSs

The Risk Reduction Rules for Type 5 RRSs expressly provide for certain types of exposure-control remedies as follows:

“Type 5 RRSs allow, in those instances where application of Type 1-4 RRSs is not appropriate under present circumstances, the use of measures to control the regulated substances or the property where the regulated substances are located.”

Ga. Comp. R. & Reg. r. 391-3-19-.07(10). Significantly, sites that comply with Type 5 RRSs remain on the HSI unless or until they comply with Type 1 through 4 RRSs, which allows for closer continued scrutiny of these sites as well as long-term public notice regarding the remaining risks at these sites. In implementing this Standard, the HSRA program has determined that Type 5 RRSs may only be adopted where compliance with Types 1 through 4 is not appropriate, but no standards apply to that determination. According to the HSRA program, this requires an EPD-approved demonstration that removal or decontamination of all source materials, soil contamination and ground water is technically infeasible or that a technically feasible remedy is cost prohibitive (without defining those terms or taking into account relative feasibility or cost). Further, the HSRA program will not approve Type 5 remedies for ground water, for the reasons expressed above.

Experience has indicated that the HSRA program does not generally view Type 5 RRSs as a reasonably available compliance option. Type 5 remedies are only rarely approved, largely because the HSRA program has no mandate to consider the relative cost of any particular remedy. Moreover, the overwhelming bias in favor of removal underlying the HSRA program is misdirected. Where exposure control remedies offer significant practical benefits and cost savings, they should have equal stature with any other remedy.

- Use of Institutional controls to achieve Type 1-4 standards

Similar to its reluctance to use Type 5 RRSs, the HSRA program substantially rejects the practical use of institutional controls as part of the remedy selection process. Institutional controls, such as land use restrictions, restrictive covenants, easements, etc., should be taken into consideration in devising a cost-effective and protective remedy. EPA, as well as most other states, now consider future land use and associated institutional controls as an important factor in cost-effective remedy selection.

Options for improving the cost-efficiency of HSRA remediations

- Minimize Use of Removal as a Favored Remedial Technology

The most important way HSRA can become more cost-effective is to ensure that it gives impartial consideration to non-removal alternatives. As discussed in detail below, most comparable programs in other states have already recognized that bulk removal of contaminated media is often an unnecessarily expensive way to protect human health and the environment. The HSRA program is now well positioned to learn from the experience of its own constituents as well as these other jurisdictions and move away from a preference for removal actions. The legislature can effectuate this result by amending HSRA to require EPD to evaluate removal remedies on equal footing with other types of remedial approaches. Specific language is set forth in Attachment A.

- Use of Institutional and Engineering Controls to Achieve Type 1-4 RRSs

HSRA should be amended to require EPD to consider the actual risk posed by a site, including the impact that any institutional or engineering controls may have on the actual exposure to contaminants at a particular site. Such a consideration would acknowledge that the actual risk posed by a site cannot be evaluated without recognizing the impact of these controls. In conjunction with, or as an alternative to either soil excavation or treatment, the HSRA program should allow more effective use of engineering controls. For instance, where a physical barrier separates potential receptors from the contamination, the exposure and risk is effectively eliminated, even though the contamination remains in place. Such barriers can range from a traditional RCRA landfill cap to a paved surface or building, either existing or newly constructed, so long as the barrier adequately isolates the contaminated soil from receptors and from other media. Other engineering controls such as in-place stabilization, containment, or solidification can also be used to effectively control exposure and migration. This exposure limitation should be recognized in calculating the concentrations of contaminants that may be left in place upon completion of a remediation without compromising human health or the environment.

- Use of Innovative Technologies

Finally, the HSRA program should be reformed to expand the scope of innovative technologies that it permits parties to use to achieve RRSs. In particular, and as discussed above, the legislature should require impartial consideration of cost-saving, innovative technologies on par with older, though usually more costly, remedies.

- Use of Type 5 RRSs

The HSRA program would be dramatically more cost-effective were it to seriously consider Type 5 RRSs when evaluating compliance with the RRSs and expand the Type 5 concept to include ground water. Such a change would require, at a minimum, a revision of the rules, to include ground water within the media eligible for Type 5 treatment. In addition, effective use of Type 5 remedies would acknowledge that the range of conditions where Types 1-4 remedies are not appropriate is much broader than the current HSRA program would suggest. More specifically, it would require recognition that removal is not practicably feasible nor cost effective in many cases.

Examples of Cost-Effective Remedy Selection

As the HSRA program is revised toward more practical cost-effective remedies, there are good examples which can be used as models, both within Georgia and in other states.

- Georgia Underground Storage Tank (UST) program

The Georgia UST program employs a case-by-case risk assessment approach to determine a practical cost-effective remedy at each site. For releases from underground storage tanks, the Georgia UST program considers whether the release presents an actual threat to a ground-water well or surface water quality; if so, active remediation is required. If there is free product floating on the surface of the ground water, removal of the free product is required. However, if there is no risk, the UST program allows a practical remedy of monitoring ground water. There is no rational basis for the disparate treatment of ground-water contamination from a UST and ground-water contamination from a HSRA site.

- The Atlantic Steel remedy

EPD's approval of the remediation of the Atlantic Steel site in downtown Atlanta provides an excellent example of the benefits of a more flexible and realistic approach to remediation. The remedy approved at Atlantic Steel includes many of the concepts discussed above and which are not, in practice, available at HSRA sites. The Atlantic Steel site was addressed as a corrective action pursuant to EPD's RCRA program rather than as a HSRA site. The remedy will allow the reuse and redevelopment of this very important site.

While the remediation of the Atlanta Steel property has been extensive and expensive, EPD has allowed a cost-effective remedy in that instance. After removal of hot spots of relatively high concentrations of contaminants, the approved plan allows for residual contamination to remain in place beneath engineered barriers (including roads and buildings) to prevent exposure to the subsurface residual contamination. Conservation easements and other institutional controls are used to insure maintenance of the barriers and to prevent exposure. Contaminated ground water is intercepted at the property boundary, treated and then discharged to the city wastewater treatment plant.

The Atlantic Steel remedy represents a practical application of risk assessment and land use controls applied on a case-by-case basis to provide a cost-effective remedy that is fully protective of human health and the environment and that makes redevelopment economically feasible. This kind of result should be embraced by the HSRA program.

Comparison to Other State Programs for Revising HSRA's Approach to Remedy Selection

- The Texas program, on which HSRA was modeled, has been substantially revised to allow more site-specific and cost effective remediation.

The HSRA program was initially patterned in part on the Texas 1993 Risk Reduction Rule Program, which used specific cleanup standards, including the concept of requiring cleanup to background. Texas has since adopted a new rule, The Texas Risk Reduction Program, which recognizes that some contamination may be left in place without creating an unacceptable risk to human health and the environment. See TNRCC Regulatory Guidance RG-366/TRRP-1(May 2001). The new regulatory guidance in Texas envisions an assessment of land use classification and ground-water classification in development of a remedy. The new standard provides for the establishment of site-specific protective concentration levels (PCLs), which vary depending upon risk. The new standard limits the need to sample for soil and ground-water contamination once residential standards have been reached, rather than requiring sampling to background. Texas now allows the use of institutional controls for non-residential property where residual contamination is left in soil or ground water. Where the property is subject to zoning or other governmental ordinance which is equivalent to a deed notice or restrictive covenant, the assessment of risk and the remedy can take this into account.

Georgia is well positioned to now revise its program to reflect the lessons learned and advances in science developed by EPA and the other states and the practical need for more cost effective remedies and realistic risk assessments.

- The new Missouri program also provides a reasonable model.

The Missouri Department of Natural Resources recently revised its cleanup guidance to allow the regulated community more flexible site-specific remedial plans. The new Missouri program is entitled Cleanup Actions Levels For Missouri (CALM). This program was developed with an advisory work group from business, environmental groups, municipalities, and the state agency. The new approach uses three tiers and integrates site assessment, site characterization, and response action with human health risk assessment. While Tier 1 cleanups are based on specific numeric values for soil and ground water, Tier 2 cleanups allow site-specific cleanup standards. A Tier 3 cleanup can propose an alternative ground-water cleanup level based on receptors and can include monitored natural attenuation. In a Tier 3 cleanup, a detailed risk assessment can be developed using institutional controls and/or engineering controls.

The Missouri CALM approach provides flexibility necessary to develop practical remedies. This approach is consistent with the case-by-case approach used by EPA and other states.

2.8 Source Material Presumption

The current HSRA Rules for compliance and delisting have an absolute requirement to “remove or decontaminate source material” wherever located. While there is no HSRA definition of source material, the HSRA program has deemed any material that contains a regulated constituent and is distinguishable from native soil or sediment to be a source material subject to the remove-or-decontaminate requirement. In the case of materials that are inherently colored or staining in nature, this requirement compels removal of stained or discolored (i.e., distinguishable) soil and sediments. At certain sites, this over-reaching HSRA source material interpretation has added a significant and costly volume of deep soil and buried stream sediments to the total volume of source material excavated, even where there is no indication that this work results in any actual reduction in risk given that the surrounding ground water or surface water are otherwise compliant with relevant cleanup criteria.

The HSRA program uses overly-conservative assumptions regarding both the definition of source materials and the actions necessary to manage the risks associated with source materials.

In order to address this problem, which results in significantly elevated cleanup costs, the legislature should amend HSRA (i) to narrow the definition of source material and (ii) to provide that source material shall be remediated to provide protection of human health and the environment (rather than only through removal/decontamination).

2.9 Compounding Effect

A more subtle, but perhaps more important, basis for the increased costs in Georgia relates to the way that the critical shortcomings outlined in this White Paper have the effect of compounding one another. For example, some states have more stringent cleanup criteria for particular contaminants; however, these states often apply these criteria only to the top few feet of soil, or permit innovative remedies to meet the criteria, or assume no complete exposure paths if, for example, there is little or no real chance for human exposure. Only in Georgia are stringent cleanup criteria compounded with inflexibility in selecting remedies, compounded with demanding requirements for points of compliance, and compounded with an aversion to institutional or engineering controls.

Each of the critical shortcomings in HSRA works individually to unnecessarily increase investigation and remediation costs and, additionally, have a compounding effect that results in substantially unnecessary costs.

The above-described policies and assumptions thus operate in combination to bring about investigations and cleanups whose costs often far exceed those necessary to protect human health and the environment. Rather than being protective and cost effective, HSRA assessments and remedies too often prove to be cost excessive.

A review of the comparable state and federal programs reveals that the statutory and regulatory language under the various jurisdictions almost always has the same general objective: protection of human health and the environment. In addition, the language implementing these objectives is likewise similar: use of risk-based, cleanup criteria. Like these programs, the Georgia Act sets forth the goal of protecting human health and the environment and the implementing regulations establish the use of RRSs to achieve that goal. Despite the similarity in objectives and implementing statutes and regulations, however, the investigation and remediation of sites under the HSRA program are, in most instances, substantially more expensive than corresponding activities in other jurisdictions.

3.0 CONCLUSIONS

The following conclusions are based on the foregoing analysis of experience with the HSRA program to date:

- (1) Business and industry has had far more experience with HSRA compliance requirements and associated costs than any other group. In contrast, municipal and county governments have yet to experience the full scope and real total cost of HSRA because they have generally not yet received CSR call-in letters.
- (2) On a comparable site basis, HSRA cleanups are some 1.5 to 10 times more expensive than cleanups in other states having the same statutory objective of protecting human health and the environment
- (3) HSRA site costs are substantially higher because the HSRA program requires use of unrealistic, site-specific, exposure presumptions that inflate the volume of soil, sediment, and ground water deemed non-compliant while disallowing practical use of engineering and institutional controls and other cost saving remedies in favor of high-cost soil and sediment removal and ground-water extraction requirements.
- (4) Preventing exposure to contaminated media thereby protects human health and the environment. In most instances, it is not necessary to remove contaminated media to prevent exposure.
- (5) Current HSRA compliance costs for delisting sites that involve soil and ground-water remediation are averaging several millions of dollars per site and the ultimate total statewide price tag for HSRA compliance can be projected to some \$5 billion. A substantial portion of this cost is unnecessary for the protection of human health and the environment.
- (6) The current HSRA program is arguably the most costly program of its kind in the nation.
- (7) The current process for listing sites on the HSI is often based on incomplete or inaccurate information and presumptions that cause some sites to be listed that do not realistically pose a significant threat or danger to human health or the environment. The investigative costs for demonstrating that no remediation is necessary can exceed \$200,000.
- (8) Most of the 36 HSI sites that have thus far been investigated, certified and delisted (as of July 2001) were small, private-party soil sites not involving ground-water impacts. Some of these 36 sites were found to already be compliant with delisting criteria without need for remediation.
- (9) EPA's Superfund and most other state superfund programs have been significantly reformed over the past few years to be more cost effective by allowing flexible use of engineering and institutional controls and innovative remedies with far less reliance on bulk removal as compared to the current HSRA program.
- (10) There is sufficient working experience with HSRA and examples from other states to provide a suitable basis for reforming the HSRA program to become much more cost effective while still being protective.

4.0 RECOMMENDATIONS

The most critical and costly shortcomings of the current HSRA program can be addressed through a limited number of legislative changes. Those recommended changes are reflected in Attachment A, a red-lined amended version of the HSRA statutory language.

If effectively implemented, the recommended changes in Attachment A will ultimately reduce demand on the Trust Fund and encourage more meaningful brownfield redevelopment in more communities across Georgia. Further, implementation of these changes will begin to ease the onerous financial burden the current HSRA program requirements are placing on business and industry, local governments, and even individuals, while still being protective of human health and the environment.

ATTACHMENT A**Recommended Legislative Changes
for
Making HSRA Cost Effective...Still Protective**

Below is the text of the Hazardous Site Response Act (HSRA) and, at the conclusion of the HSRA text, some related text from the administrative portions of the Code. Proposed revisions to these code sections to achieve the recommended changes set forth in the GIEC HSRA White Paper is shown in redlining.

12-8-90 G

*** CODE SECTION *** 08/27/01

12-8-90.

This part shall be known and may be cited as the "Georgia Hazardous Site Response Act."

12-8-91 G

*** CODE SECTION *** 08/27/01

12-8-91.

(a) It is declared to be the public policy of the State of Georgia, in furtherance of its responsibility to protect the public health, safety, and well-being of its citizens and to protect and enhance the quality of its environment, to require corrective action for releases of hazardous wastes, hazardous constituents, and hazardous substances, without regard to when such releases may have occurred, into the environment that may pose a threat to human health or the environment and to provide incentives for the reduction of the amount of hazardous wastes generated or managed in the state. Additionally, the purpose of this part is to reduce the generation of hazardous wastes in this state and to encourage hazardous waste generators, prior to considering landfill disposal, to consider the following measures in descending order of preference:

- (1) Reduce the amount of wastes generated through improvement in industrial processes;*
- (2) Isolate hazardous materials from mixtures in which they occur;*
- (3) Reuse and recycle wastes in accordance with state and federal requirements;*
- (4) Transfer wastes through clearing-houses so that they may be recycled in industrial processes;*
- (5) Detoxify or neutralize wastes into less harmful substances or destroy such wastes; and*
- (6) Store hazardous waste residues in aboveground facilities using encapsulation and monitoring.*

(b) The General Assembly declares its intent to fund the execution of the public policy set forth in subsection (a) of this Code section by and through the division with the fees established and collected by the division pursuant to subsection (e) of Code Section 12-2-2, subsection (e) of Code Section 12-8-39, subsection (d) of Code Section 12-8-68, and Code Section 12-8-95.1. The General Assembly further declares its intent to ensure that the funding provided by fees on hazardous waste management activities and by owners and operators of solid waste disposal facilities pursuant to those Code sections and through the collection of civil penalties will not be diverted for any purpose other than the administration of this article by the division, the prevention of pollution, including reduction

of hazardous wastes generated, and the effectuation of corrective action at sites that may threaten human health or the environment where hazardous wastes, hazardous constituents, or hazardous substances have been disposed of or released. Appropriation of funds to the department for inclusion in the hazardous waste trust fund continued in existence by subsection (a) of Code Section 12-8-95 shall be deemed consistent with this declaration of legislative intent.

12-8-92 G

*** CODE SECTION *** 08/27/01

12-8-92.

Unless otherwise defined in this part, the definition of all terms included in Code Section 12-8-62 shall be applicable to this part.

As used in this part, the term:

- (1) *"Corrective action contractor" means any person contracting with the division to perform any activities authorized to be paid from the hazardous waste trust fund.*
- (2) *"Environment" means:*
 - (A) *The navigable waters, the waters of the contiguous zone, and the ocean waters of which the natural resources are under the exclusive management authority of the United States under the Magnuson Fishery Conservation and Management Act; and*
 - (B) *Any other surface water, ground water, drinking water supply, land surface or subsurface strata, or ambient air within the United States or under the jurisdiction of the United States.*
- (3) *"Facility" means:*
 - (A) *Any building, structure, installation, equipment, pipe or pipeline, pipe into a sewer or publicly owned treatment works, well, pit, pond, lagoon, impoundment, ditch, landfill, storage container, motor vehicle, rolling stock, or aircraft; or*
 - (B) *Any site or area where a hazardous waste, hazardous constituent, or hazardous substance has been deposited, stored, disposed of, placed, or has otherwise come to be located.*

This term does not include any consumer product in consumer use but does include any vessel.

- (4) *"Hazardous substance" means any substance listed on the List of Hazardous Substances and Reportable Quantities, codified as 40 C.F.R., Part 302, Table 302.4, in force and effect on February 1, 1996, or any substance listed on the List of Extremely Hazardous Substances and Their Threshold Planning Quantities, codified as 40 C.F.R., Part 355, Appendix A, in force and effect on February 1, 1996.*
- (5) *"Inventory" means the hazardous site inventory compiled and updated by the division pursuant to Code Section 12-8-97.*
- (6) *"Onshore facility" means any facility of any kind including, but not limited to, motor vehicles and rolling stock located in, on, or under any land or nonnavigable waters within the United States.*
- (7) *"Owner" or "operator" means:*
 - (A) *In the case of a vessel, any person owning, operating, or chartering by demise such vessel;*

- (B) *In the case of an onshore facility or an offshore facility, any person owning or operating such facility; and*
- (C) *In the case of any facility, title or control of which was conveyed due to bankruptcy, foreclosure, tax delinquency, abandonment, or similar means to a unit of state or local government, any person who owned, operated, or otherwise controlled activities at such facility immediately beforehand.*

Such term does not include a person who holds indicia of ownership primarily to protect said person's security interest in the facility or who acts in good faith solely in a fiduciary capacity and who did not actively participate in the management, disposal, or release of hazardous wastes, hazardous constituents, or hazardous substances from the facility. Such term does not include a unit of state or local government which acquired ownership or control involuntarily through bankruptcy, tax delinquency, abandonment, or other circumstances in which the government involuntarily acquires title by virtue of its function as sovereign; provided, however, that this exclusion shall not apply to any state or local government which has caused or contributed to the release of a hazardous waste, hazardous constituent, or hazardous substance from the facility.

(8) *"Person" means an individual, trust, firm, joint-stock company, corporation, partnership, association, authority, county, municipality, commission, political subdivision of this state, or any agency, board, department, or bureau of any other state or of the federal government.*

(9) *"Person who has contributed or who is contributing to a release" means:*

- (A) *The owner or operator of a facility;*
- (B) *Any person who at the time of disposal of any hazardous waste, hazardous constituent, or hazardous substance owned or operated any facility at which such hazardous waste, hazardous constituent, or hazardous substance was disposed of;*
- (C) *Any person who by contract, agreement, or otherwise arranged for disposal or treatment of or arranged with a transporter for transport for disposal or treatment of hazardous wastes, hazardous constituents, or hazardous substances owned or possessed by such person or by any other party or entity at any facility owned or operated by another party or entity and containing such hazardous wastes, hazardous constituents, or hazardous substances. A person who arranged for the recycling of recovered materials consisting solely of scrap paper, scrap plastic, scrap glass, scrap textiles, scrap rubber other than whole tires, scrap metal or spent lead-acid, nickel-acid, nickel-cadmium, and other batteries, and not consisting of any residue from a pollution control device, shall not be deemed to have arranged for treatment or disposal under this subparagraph; and*
- (D) *Any person who accepts or accepted any hazardous wastes, hazardous constituents, or hazardous substances for transport to disposal or treatment facilities or sites selected by such person, from or at which facility or site there is a release of a hazardous waste, a hazardous constituent, or a hazardous substance.*

(10) *"Pollution prevention" means:*

- (A) *The elimination at the source of the use, generation, or release of hazardous constituents, hazardous substances, or hazardous wastes; or*
- (B) *Reduction at the source in the quantity and toxicity of such substances.*

- (11) "Release" means any intentional or unintentional act or omission resulting in the spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment, including without limitation the abandonment or discarding of barrels, containers, and other closed receptacles, of any hazardous waste, hazardous constituent, or hazardous substance; provided, however, that such term shall not include any release which results in exposure to persons solely within a workplace, with respect to a claim which such persons may assert against the employer of such persons; emissions from the engine exhaust of any motor vehicle, rolling stock, aircraft, vessel, or pipeline pumping station; or the normal application of fertilizer.
- (12) "Site" means that portion of the owner's contiguous property and any other owner's property affected by a release exceeding a reportable quantity.
- (13) "Small quantity generator" means a hazardous waste generator who generates greater than 220 pounds but less than 2,200 pounds of hazardous waste in one month, as provided by rules promulgated by the board in accordance with this article.
- (14) "Source material" means non-natural material released to the environment that is in a physical state that makes it likely to allow contaminants to migrate into soil or ground water in concentrations above the relevant cleanup criteria for the hazardous wastes, hazardous substances, or hazardous constituents associated with the source material.

12-8-93 G

*** CODE SECTION *** 08/27/01

12-8-93.

- (a) In the performance of its duties, and in addition to the powers set forth in Code Section 12-8-64, the board shall have the power to adopt, promulgate, modify, amend, and repeal rules and regulations to implement and enforce the provisions of this part as the board may deem necessary to provide for corrective action for releases of hazardous wastes, hazardous constituents, and hazardous substances into the environment that pose a present or future danger to human health or the environment and to provide incentives for the reduction of the amount of hazardous wastes generated or managed in the state. Such rules and regulations may be applicable to the state as a whole or may vary from region to region, as may be appropriate to facilitate the accomplishment of the provisions, purposes, and policies of this part.
- (b) The board's rules and regulations shall include, but shall not be limited to, the following:
- (1) Rules and regulations governing the reporting of releases of hazardous wastes, hazardous constituents, and hazardous substances, including rules and regulations governing reportable quantities, determination of reportable quantities, and use of site-specific information to determine whether reportable quantities have been released, provided that any methodology or numeric or narrative criteria used in determining reportable quantities shall also be promulgated as a rule or regulation;
 - (2) Rules and regulations governing the investigation of sites, provided that such rules shall specify that to the extent the director requires a delineation of contamination, such delineation shall be to the extent necessary to delineate contamination to federal primary or secondary maximum contaminant levels if established, and if such levels are not established, to other levels determined necessary by the director to make a determination whether corrective action is necessary and to reasonably design such corrective action, and provided further that such rules shall provide for exceptions to investigation requirements where such requirements are technically impracticable or where the cost of particular requirements substantially exceeds the benefits.

- (3) Rules and regulations governing corrective action at sites where hazardous wastes, hazardous constituents, or hazardous substances have been disposed of or released regardless of the date when such disposal or release occurred, including rules and regulations establishing cleanup standards, provided that
- (i) Such rules shall specify that an actual risk of human exposure must be demonstrated in order for corrective action to be required, and shall not assume exposures that cannot reasonably be demonstrated;
 - (ii) For the purposes of evaluating the adequacy of any proposed corrective action, such rules shall take account of probable human exposures to source material or contaminated soil or ground water, and where such exposures are unlikely or can be reasonably controlled through engineering or institutional means, then such means shall be considered an equally acceptable means of corrective action as removal or treatment methodologies;
 - (iii) For the purposes of evaluating corrective action alternatives, such rules shall specify that relative practicability and relative cost-effectiveness among alternatives shall be taken into account, and such rules shall specify that corrective action utilizing proposed innovative technologies or cost-saving approaches shall be given preference;
 - (iv) For the purposes of establishing standards as to the performance of any corrective action, such rules shall ensure that the methodologies used to measure the achievement of such standards are consistent with generally accepted scientific methodologies involved in setting such standards, such that where standards are calculated based on average exposures across a site, the measurements regarding the achievement of that standard shall likewise reflect average exposures across the site;
- ~~(3)~~(4) Rules and regulations governing procedures for placement of sites on and removal of sites from the hazardous site inventory required under the provisions of Code Section 12-8-97, provided that such rules and regulations shall specify that at sites where potentially responsible persons as defined in Section 12-8-92(9) demonstrate that hazardous wastes, hazardous constituents, or hazardous substances are not present in quantities deemed reportable by rules of the board, such sites shall be removed from the inventory.
- ~~(4)~~(5) Rules and regulations governing procedures and criteria for making a determination whether property requires corrective action pursuant to paragraph (89) of subsection (a) of Code Section 12-8-97;
- ~~(5)~~(6) Rules and regulations governing procedures for the filing in the deed records of the superior courts of additional affidavits concerning property for which an initial affidavit has been filed pursuant to Code Section 12-8-97; and
- ~~(6)~~ Rules and regulations governing the waiver of hazardous waste management fees and hazardous substance reporting fees as provided in subsection (i) of Code Section 12-8-95.1.

12-8-94 G

*** CODE SECTION *** 08/27/01

12-8-94.

- (a) *In addition to the powers and duties specified in Code Section 12-8-65, the director shall have and may exercise the following powers and duties:*
- (1) *To make determinations, in accordance with procedures and criteria established by the board, as to whether property requires corrective action pursuant to the provisions of paragraph (8) of subsection (a) of Code Section 12-8-97;*
 - (2) *To ensure that corrective action is taken in accordance with rules established by the board for releases of hazardous wastes, hazardous constituents, or hazardous substances into the environment that pose a present or future danger to human health or the environment;*
 - (3) *To collect fees for hazardous waste management activities and hazardous substance reporting;*
 - (4) *To administer the hazardous waste trust fund and expend the principal and interest of such trust fund;*
 - (5) *To appoint a hazardous waste trust fund advisory committee and to consult with that committee in developing rules and regulations regarding criteria for compilation of the hazardous site inventory, site priorities, uses of the fund, cleanup standards, and deed notations. At a minimum, the director shall appoint to the committee four representatives from local government, four representatives from business and industry, and four representatives from other interested parties. Upon promulgation of rules and regulations in accordance with this part, the director shall no longer be required to consult with the committee; provided, however, that the director shall consult with the committee from time to time as necessary to adopt, promulgate, modify, amend, or repeal rules and regulations in accordance with this part; and*
 - (6) *The director shall have the authority to perfect, foreclose, negotiate, settle, release or cancel any lien filed under subsection (e) of Code Section 12-8-96, where such action is in the best interest of the state.*
- (b) *The powers and duties described in subsection (a) of this Code section may be exercised and performed by the director through such duly authorized agents and employees as the director deems necessary and proper.*

12-8-95 G

*** CODE SECTION *** 08/27/01

12-8-95.

- (a) *There shall continue in existence the hazardous waste trust fund. The hazardous waste trust fund shall be funded in accordance with subsection (b) of Code Section 12-8-91. All moneys deposited in the fund shall be deemed expended and contractually obligated and shall not lapse to the general fund. The director shall serve as trustee of the hazardous waste trust fund.*
- (b) *The moneys deposited in the hazardous waste trust fund may be expended by the director as follows:*
- (1) *For activities associated with the investigation, detoxification, removal, and disposal of any hazardous wastes, hazardous constituents, or hazardous substances at sites where corrective action is necessary to mitigate a present or future danger to human health or the environment;*
 - (2) *For emergency actions the director considers necessary to protect public health, safety, or the environment whenever there is a release of hazardous wastes, hazardous constituents, or hazardous substances;*
 - (3) *For activities of the division associated with the administration of this part;*
 - (4) *In accordance with rules promulgated by the board, for financing of the state and local share of the costs associated with the investigation, remediation, and postclosure care and maintenance of sites placed on the National Priority List pursuant to the federal Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended, or sites placed on the hazardous site inventory pursuant to Code Section 12-8-97; provided, however, that if a county or municipal corporation has been or is the owner of or operator of such site, not less than \$500,000.00 of such costs shall be paid from the hazardous waste trust fund;*
 - (5) *For activities administered by the director associated with pollution prevention, including reduction of hazardous wastes generated in the state;*
 - (6) *Provided that annual appropriations are made to the Department of Natural Resources in accordance with subsection (b) of Code Section 12-8-91, for transfer on an annual basis to the Georgia Hazardous Waste Management Authority in an amount equal to 10 percent of the previous year's payment into the state treasury by the division of fees and penalties pursuant to subsection (e) of Code Section 12-2-2, subsection (e) of Code Section 12-8-39, and Code Section 12-8-95.1. If in any year the fees cease to be collected due to the unencumbered principal balance exceeding \$25 million in the hazardous waste trust fund, a transfer of funds shall be made to the Georgia Hazardous Waste Management Authority from the principal of the hazardous waste trust fund equal to the average transfer for the three preceding years. Such transferred funds are to be administered by the chief administrative officer of the Georgia Hazardous Waste Management Authority to fund source reduction and project activities as set forth in Article 4 of this chapter and in accordance with the policies of the board.*
- (c) *The director may require the demonstration of financial responsibility as a condition of an order requiring corrective action for the release of hazardous wastes, hazardous constituents, or hazardous substances.*
- (d) *If the director determines that corrective action has not been carried out as required by a condition of an order of the director to the reasonable satisfaction of the director, the director may implement the applicable financial responsibility instruments. The proceeds from any*

applicable financial responsibility instruments shall be deposited in the hazardous waste trust fund.

- (e) *In any case where a person is in bankruptcy, reorganization, or other arrangement pursuant to the federal Bankruptcy Code or where, with reasonable diligence, jurisdiction in any state court or any federal court cannot be obtained over a person likely to be solvent at the time of judgment, any claim arising from conduct for which evidence of financial responsibility must be provided under this Code section may be asserted directly against the guarantor providing such evidence of financial responsibility. In the case of any action pursuant to this subsection, such guarantor shall be entitled to invoke all rights and defenses which would have been available to the person if any action had been brought against the owner or operator by the claimant and which would have been available to the guarantor if an action had been brought against the guarantor by the owner or operator.*
- (f) *The total liability of any guarantor shall be limited to the aggregate amount which the guarantor has provided as evidence of financial responsibility to the owner or operator under this Code section. Nothing in this subsection shall be construed to limit any other state or federal statutory, contractual, or common-law liability of a guarantor to a person including, but not limited to, the liability of such guarantor for bad faith either in negotiating or in failing to negotiate the settlement of any claim. Nothing in this subsection shall be construed to diminish the liability of any person under Section 107 or 111 of the federal Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended, or any other applicable law.*

12-8-95.1 G

*** CODE SECTION *** 08/27/01

12-8-95.1.

- (a) *The division is authorized and directed to charge and collect the fees for hazardous waste management activities and hazardous substance reporting fees as provided in this subsection. As used in this Code section, the term "hazardous waste" shall not include any material excluded by 40 C.F.R. Part 261 of the Code of Federal Regulations. Every large quantity generator and every small quantity generator shall pay the greater of \$100.00 per calendar year or the total of the hazardous waste management fees, and every person who is required to report pursuant to Section 312 or 313 of Title III of the federal Superfund Amendments and Reauthorization Act of 1986 shall pay the annual hazardous substance reporting fees, imposed as follows:*
- (1) *Every large quantity generator of hazardous waste shall pay an annual fee of \$20.00 per ton for hazardous waste shipped off site for disposal or incineration, \$16.00 per ton for hazardous waste shipped off site for treatment or storage, \$2.00 per ton for hazardous waste shipped off site for recycling or reuse, and, beginning January 1, 1995, \$9.00 per ton for hazardous waste shipped off site for treatment by being burned for energy recovery in accordance with rules and regulations promulgated pursuant to Part 1 of this article; provided, however, that no large quantity generator shall be liable for off-site hazardous waste management fees exceeding \$75,000.00 in any calendar year. In no event shall any person be liable for an off-site hazardous waste management fee on any hazardous waste for which an off-site hazardous waste management fee has previously been paid;*
 - (2) *Every large quantity generator of hazardous waste shall pay an annual fee of \$10.00 per ton for hazardous waste disposed of or incinerated on site, \$4.00 per ton for hazardous waste treated or stored on site, \$1.00 per ton for hazardous waste reused or recycled on site, and, beginning January 1, 1995, \$2.50 per ton for hazardous waste treated on site by being burned for energy recovery in accordance with rules and regulations promulgated pursuant to Part 1 of this article; provided, however, that no large quantity generator shall be liable for on-site hazardous waste management fees for disposal or incineration, treatment or storage, recycling or reuse, or treatment by burning for energy*

recovery in any calendar year exceeding the following amounts and according to the following schedule:

- (A) Twenty-five thousand dollars for such payments due on July 1, 1993, and on July 1, 1994;
- (B) Fifty thousand dollars for such payments, excluding payments for the on-site treatment of waste water which is a hazardous waste, due on July 1, 1995, and on July 1, 1996;
- (C) Seventy-five thousand dollars for such payments, excluding payments for the on-site treatment of waste water which is a hazardous waste, due on and after July 1, 1997;
- (D) One thousand five hundred dollars for waste water which is a hazardous waste which is treated on site for payments due on July 1, 1995;
- (E) Three thousand dollars for waste water which is a hazardous waste treated on site for payments due on July 1, 1996; and
- (F) Seven thousand five hundred dollars for waste water which is a hazardous waste treated on site for payments due on and after July 1, 1997.

For the purposes of this paragraph, a generator who generates waste water which is a hazardous waste shall not be required to count such hazardous waste in determining its status as a large quantity generator, a small quantity generator, or a conditionally exempt small quantity generator. For the purposes of this paragraph, dilution of waste water that is a hazardous waste shall be considered treatment subject to the fees established by this paragraph. A large quantity generator which pays fees for the off-site management of hazardous waste under paragraph (1) of this subsection for a hazardous waste which was previously managed on site shall not pay the applicable on-site management fee for that hazardous waste;

- (3) Every person who receives hazardous waste generated outside this state shall pay an annual fee of \$20.00 per ton for hazardous waste disposed of or incinerated, \$16.00 per ton for hazardous waste treated or stored, \$2.00 per ton for hazardous waste that is recycled or reused, and, beginning January 1, 1995, \$9.00 per ton for hazardous waste treated by being burned for energy recovery in accordance with rules and regulations promulgated pursuant to Part 1 of this article; provided, however, that no person shall be liable for importation fees exceeding \$75,000.00 per out-of-state generator in any calendar year. In no case shall any person who receives hazardous waste from any person outside this state and who pays an importation fee on such waste pursuant to this paragraph be liable for the off-site hazardous waste management fees required by paragraph (1) of this subsection. Persons who receive hazardous waste generated outside this state are not required to pay the fees required by this paragraph for those wastes generated by conditionally exempt small quantity generators which are located outside this state. For the purposes of this paragraph, a "conditionally exempt small quantity generator" means a generator who generates 220 pounds or less of hazardous waste in one month, as provided by rules promulgated by the board in accordance with this article; and
- (4) Each person who is required to report pursuant to Section 313 of Title III of the federal Superfund Amendments and Reauthorization Act of 1986 shall pay to the division an annual hazardous substance reporting fee as follows:
 - (A) A facility with no reported release shall pay no fee;
 - (B) A facility with a reported release of less than 1,000 pounds during the calendar year shall pay a fee of \$500.00 for that calendar year;

- (C) *A facility with a reported release equal to or greater than 1,000 pounds but less than 10,000 pounds during the calendar year shall pay a fee of \$1,000.00 for that calendar year; and*
 - (D) *A facility with a reported release equal or greater than 10,000 pounds during the calendar year shall pay a fee of \$1,500.00 for that calendar year.*
- (b) *All hazardous waste and hazardous substance fees required by subsection (a) of this Code section shall be paid to the division for transfer into the state treasury to the credit of the general fund. The division shall collect such fees until the unencumbered principal balance of the hazardous waste trust fund equals or exceeds \$25 million, at which time no hazardous waste or hazardous substance fees shall be levied until the balance in that fund is less than or equal to an unencumbered balance of \$12.5 million, in which case the levy and collection of hazardous waste fees shall resume at the beginning of the next calendar year following the year in which such unencumbered balance occurs. The director shall provide written notice to all large quantity generators and hazardous waste treatment, storage, and disposal facilities and all persons who are required to report pursuant to Sections 312 and 313 of Title III of the federal Superfund Amendments and Reauthorization Act of 1986 at such time as the director receives notice that the unencumbered principal balance of the fund equals or exceeds \$25 million or is equal to or less than \$12.5 million.*
- (c) *All hazardous waste fees levied under this Code section shall be based on the amounts of hazardous waste managed or imported within the preceding calendar year. Such fees for the period July 1, 1992, through December 31, 1992, shall be paid to the division not later than July 1, 1993. All subsequent hazardous waste fees shall be paid not later than the first day of July of each year for the preceding calendar year.*
- (d) *All hazardous substance fees levied under this Code section shall be based on the hazardous substances reported for the preceding calendar year. All hazardous substance fees shall be paid not later than the first day of July of each year for the preceding calendar year.*
- (e) *Persons who make payments of fees levied by this Code section later than 30 days after the due date specified in subsection (c) of this Code section shall pay a penalty of 15 percent of the balance due and shall pay interest on the unpaid balance at the rate imposed by law for delinquent taxes due to the state. Delinquent fees may be collected in a civil action instituted in the name of the director. In addition to the 15 percent penalty and the interest that may be collected along with the delinquent fees as provided in this subsection, the director shall be entitled to collect all costs, including administrative costs, and legal expenses incurred by the state in connection with its collection efforts.*
- (f) *Hazardous waste which is generated by any of the following means is exempted from the fees required by this Code section:*
 - (1) *Corrective action required by an order, permit, or approved closure plan issued pursuant to Part 1 of this article;*
 - (2) *Voluntary corrective action required by any person in accordance with applicable laws and regulations; and*
 - (3) *Response actions required under the federal Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended.*
- (g) *The following persons shall not be required to pay the hazardous substance reporting fees required by this Code section:*
 - (1) *Persons who report pursuant to Section 312 or 313 of Title III of the federal Superfund Amendments and Reauthorization Act of 1986 only for substances not designated as regulated substances pursuant to rules and regulations of the board; and*

- (2) *Persons who report pursuant to Section 312 or 313 of Title III of the federal Superfund Amendments and Reauthorization Act of 1986 only for petroleum fuels, lubricants, and hydraulic fluids and components thereof that are designated as regulated substances pursuant to rules and regulations of the board.*
- (h) *Unless fee requirements established in this Code section are reimposed by the General Assembly, no such fees shall be levied after July 1, 2003.*
- (i) *In accordance with rules promulgated by the board pursuant to paragraph (6) of Code Section 12-8-93, the director is authorized to grant a waiver of a portion of the hazardous waste management fees and hazardous substance reporting fees provided by subsection (a) of this Code section not to exceed a 25 percent reduction per year for a maximum of three years for any company as an incentive upon the recommendation of the director of the Pollution Prevention Assistance Division made in conjunction with programs and activities designed to encourage industries in the state to reduce their generation of wastes, including but not limited to programs established to recognize and reward pollution performance and environmental improvement.*

12-8-96 G

*** CODE SECTION *** 08/27/01

12-8-96.

- (a) *Whenever the director has reason to believe that ~~there is or has been~~ a release of hazardous wastes, hazardous constituents, or hazardous substances into the environment requires investigation or corrective action in accordance with rules promulgated by the board, regardless of the time at which release of such hazardous wastes, hazardous constituents, or hazardous substances occurred, and has reason to believe that such release poses a danger to health or the environment, the director shall make a reasonable effort to identify each person who has contributed or who is contributing to such a release. The director shall then notify each such person in writing of the opportunity to perform voluntarily such investigation as is required by rules promulgated by the board. If corrective action has been determined to be necessary, the director shall provide the opportunity for each person who has contributed or who is contributing to such a release to perform corrective action in accordance with rules promulgated by the board underwith an administrative consent order entered into with the director within such period of time as may be specified by the director in written correspondence to the person. If the person fails or refuses to enter into such an administrative consent order with the director for the performance of corrective action within the period of time specified by the director, the director may issue an order directed to any such person. The order may direct that necessary corrective action be taken within a reasonable time to be prescribed in the order.*
- (b) *If a person fails to comply with such an order or if all necessary corrective action cannot be obtained from the responsible person or persons, the director may undertake corrective action utilizing funds from the hazardous waste trust fund.*
- (c) *The division or its corrective action contractors may enter upon the property of any person, at such time and in such manner as deemed necessary by the director, to effectuate the necessary corrective action to protect human health and the environment.*
- (d) *The State of Georgia and the hazardous waste trust fund are relieved from all liability for loss of business, damages, and taking of property associated with the corrective action.*
- (e) *Whenever the director utilizes funds from the hazardous waste trust fund, such expenditure shall constitute a debt to the state. Any such debt, together with interest accruing at a rate of 12 percent per annum, shall constitute a lien on the real property for which such funds are being expended or have been expended. In order to perfect the lien created by this article, the director shall file a claim of lien with the clerk of the superior court in the county in which*

the real property is located. Such claim of lien shall, at a minimum, accurately describe the property on which the lien is imposed and shall state the type of corrective action, the authority pursuant to which the corrective action is being performed, the date the corrective action began, the cost to date of the claim, and the estimated total cost. Such claim of lien may be updated from time to time. The director shall mail a copy of the claim of lien to the owner of the real property and to all other persons the director believes to be liable for the cost of the corrective action. The clerk of the superior court shall index the claim of lien in the land records of the court. The filing of the claim of lien shall be notice to all persons of the state's lien against the real property. The lien provided by this Code section shall be superior to all other liens except liens for taxes and other prior perfected recorded liens or claims of record. The lien created by this Code section may be foreclosed as provided in Code Section 44-14-530. All funds obtained from the foreclosure or settlement of any lien filed under this Code section shall be deposited into the hazardous waste trust fund subject to the provisions of Code Section 45-12-92. No transferral of title, sale, or execution of lien, whether judicial or nonjudicial, shall divest the lien provided by this Code section. However, the lien provided for in this subsection shall not be available where the present owner of the real property otherwise subject to such lien did not cause or contribute to a release which resulted in the expenditure of hazardous waste trust funds upon the property, unless that owner knew or in the exercise of reasonable diligence should have known that the release was occurring during his or her period of ownership or that the release had occurred prior to his or her acquisition of ownership.

12-8-96.1 G

*** CODE SECTION *** 08/27/01

12-8-96.1.

- (a) *Each and every person who contributed to a release of a hazardous waste, a hazardous constituent, or a hazardous substance shall be jointly, severally, and strictly liable to the State of Georgia for the reasonable costs of activities associated with the cleanup of environmental hazards, including legal expenses incurred by the state pursuant to subsection (a) of Code Section 12-8-96, as a result of the failure of such person to comply with an order issued by the director. The person may, in addition, be liable for punitive damages in an amount at least equal to the costs incurred by the state and not more than three times the costs incurred by the state for activities associated with the cleanup of environmental hazards. Costs and damages incurred by the state may be recovered in a civil action instituted in the name of the director. All costs recovered by the state pursuant to this Code section shall be deposited into the hazardous waste trust fund.*
- (b) *Any action for the recovery of costs and for punitive damages shall be commenced within six years of the date on which all costs have been incurred.*
- (c) *No person shall be liable for costs or damages pursuant to this Code section if he can show by a preponderance of the evidence that the release of a hazardous waste, a hazardous constituent, or a hazardous substance was caused solely by:*
- (1) *An act of God;*
 - (2) *An act of war;*
 - (3) *An act or omission of a third party other than an employee or agent of the person or other than one whose act or omission occurs in connection with a contractual relationship, existing directly or indirectly, with the person, if the person establishes by a preponderance of the evidence that:*
 - (A) *He had no relationship with the third party nor exercised any control over activities of the third party; and*

- (B) *He took precautions against foreseeable acts or omissions of any such third party and the consequences that could foreseeably result from such acts or omissions; or*
- (4) *Any combination of paragraph (1), (2), or (3) of this subsection.*
- (d)(1) *For purposes of paragraph (3) of subsection (c) of this Code section, a contractual relationship may be conclusively established by, but not limited to, land contracts, deeds, or other instruments transferring title or possession, unless the real property on which the disposal or release of hazardous wastes, hazardous constituents, or hazardous substances has occurred or is occurring was acquired by the person after the disposal or release of the hazardous wastes, hazardous constituents, or hazardous substances and one or more of the following circumstances are established by a preponderance of the evidence:*
- (A) *At the time the person acquired the site, the person did not know and had no reason to know that any hazardous waste, hazardous constituent, or hazardous substance had been disposed of or released at the site;*
- (B) *The person is a government entity which acquired the site by escheat, through any other involuntary transfer or acquisition, or through the exercise of eminent domain by purchase or condemnation; or*
- (C) *The person acquired the site by inheritance or bequest and that one or more of the circumstances described in paragraph (1), (2), or (3) of subsection (c) of this Code section are applicable.*
- (2) *To establish that the person had no reason to know as provided in subparagraph (A) of paragraph (1) of this subsection, the person must have undertaken, at the time of acquisition, all appropriate inquiries into the previous ownership and uses of the property consistent with good commercial or customary practice in an effort to minimize liability. For purposes of the preceding sentence, the finder of fact shall take into account any specialized knowledge or experience on the part of the person, the relationship of the purchase price to the value of the property if uncontaminated, commonly known or reasonably ascertainable information about the property, the obviousness of the presence or likely presence of contamination at the property, and the ability to detect such contamination by appropriate inspection.*
- (3) *Nothing in this subsection shall diminish the liability of any previous owner of such property who would otherwise be liable under this part. Notwithstanding this paragraph, if a person obtained actual knowledge of the disposal or release of a hazardous waste, hazardous constituent, or hazardous substance at the site when the person owned the real property and then subsequently transferred ownership of the property to another person without disclosing such knowledge, the person so transferring the property shall be treated as liable under subsection (a) of this Code section, and no defense under subsection (c) of this Code section shall be available to such person. Nothing in this subsection shall affect the liability under this part of a person who, by any act or omission, causes or contributes to the disposal or release of a hazardous waste, a hazardous constituent, or a hazardous substance which is the subject of the action relating to the site.*
- (e) *During or following the undertaking of any corrective action, any person may seek contribution from any other person who has contributed or is contributing to any release of a hazardous waste, a hazardous constituent, or a hazardous substance. Such claims for contribution shall be governed by the law of this state. In resolving contribution claims, the court may allocate costs among liable parties using such equitable factors as the court determines to be appropriate. In any action filed by the director for the recovery of costs and damages pursuant to this Code section, any third-party claim for contribution may, upon the motion of the director, be severed and maintained as a separate action.*

- (f) *A person who has voluntarily agreed to perform corrective action pursuant to an administrative consent order with the director shall not be liable for claims for contribution regarding matters addressed in the administrative consent order. Such administrative consent order does not discharge any other person who has contributed or is contributing to a release of hazardous wastes, hazardous constituents, or hazardous substances unless the terms of the administrative consent order so provide, and the other persons remain liable for any corrective action deemed necessary by the director but not agreed to in the administrative consent order.*

12-8-96.2 G

*** CODE SECTION *** 08/27/01

12-8-96.2.

- (a) *No corrective action contractor engaged in activities associated with the cleanup of environmental hazards created by others shall be liable for any damages arising from the release of a hazardous waste, hazardous constituent, or hazardous substance resulting from such activity in an amount greater than \$1 million to any one person or \$3 million to all persons for a single occurrence. The limitation of liability of this Code section shall not:*
- (1) *Affect any right of indemnification which such person has, or may acquire by contract, against any other person who is liable for creating an environmental hazard; or*
 - (2) *Apply to persons who intentionally, wantonly, or willfully violate federal or state regulations in the cleanup process.*
- (b) *For purposes of Code Section 12-8-96.1 and this Code section, the phrase "activities associated with the cleanup of environmental hazards" shall mean activities including investigation, evaluation, planning, design, engineering, removal, construction, and ancillary services which are carried out to abate or cleanup a hazardous waste, hazardous constituent, or hazardous substance.*
- (c) *Nothing contained in this Code section shall be construed to be a waiver of the sovereign immunity of this state or of any agency or political subdivision of this state.*

12-8-96.3 G

*** CODE SECTION *** 08/27/01

12-8-96.3.

- (a) *As used in this Code section, the term:*
- (1) *"Affected property" means real property listed on the hazardous site inventory maintained pursuant to Code Section 12-8-97.*
 - (2) *"Bona fide purchaser" means a person who has purchased affected property and has complied with the provisions of subsection (b) of this Code section relative to such property; provided, however, that no person may qualify as a bona fide purchaser if such person:*
 - (A) *Is a person who has contributed or is contributing to a release;*
 - (B) *Has or in the past has had a contractual relationship with a person who has contributed or is contributing to a release;*
 - (C) *Is related by blood or marriage to a previous owner of the property or to a person who contributed or is contributing to the release or is a shareholder, employee, agent, or is otherwise affiliated with such person;*

- (D) *Is a predecessor or successor entity, subsidiary, owner, or division of any person who has contributed to or is contributing to a release;*
 - (E) *Is in violation of any order, judgment, statute, rule, or regulation within the jurisdiction of the division;*
 - (F) *Is an owner or operator of an underground storage tank, as defined by Code Section 12-13-3, located at the affected property and subject to the financial responsibility regulations promulgated pursuant to Code Section 12-13-9;*
 - (G) *Is an owner or operator of a solid waste handling, disposal, or thermal treatment technology facility, as defined by Code Section 12-8-22, located at the affected property and subject to permitting requirements pursuant to Code Section 12-8-24;*
 - (H) *Is an owner or operator of a "hazardous waste facility" as defined by paragraph (11) of Code Section 12-8-62; or*
 - (I) *Is not able to meet such other criteria as may be established by the board pursuant to Code Section 12-8-93.*
- (3) *"Cleanup standards" means those rules adopted by the board pursuant to Code Section 12-8-93.*
- (4) *"Contractual relationship" means a contractual relationship established as provided in subsection (d) of Code Section 12-8-96.1.*
- (5) *"Person who has contributed or is contributing to a release" means such term as defined in paragraph (9) of Code Section 12-8-92.*
- (b) *A person desiring to qualify as a bona fide purchaser shall, before purchasing the affected property, present to the director a corrective action plan which describes in detail those actions needed to bring the affected property into compliance with cleanup standards. The director shall approve the plan if, in his or her opinion, the plan will bring the property into compliance with the cleanup standards. Such plan shall include a schedule for completion, which shall be not longer than one year following the date the plan is finally approved, which shall be the date the purchaser and the director enter into an administrative consent order incorporating the plan; provided, however, that the director may extend the completion date by up to six months if, in his or her opinion, the purchaser has made a good faith attempt to complete the corrective action within the time provided in the consent order and that the corrective action can be completed within the period of the extension. If the corrective action provided for in the administrative consent order is completed to the satisfaction of the director, the director shall certify that the purchaser is a bona fide purchaser of the affected property for purposes of this Code section.*
- (c) *A bona fide purchaser shall not be liable for third-party claims for contribution or for third-party claims for damages arising from a release of the hazardous waste, hazardous substance, or hazardous constituent which is the subject of the corrective action included in the consent order provided for in subsection (b) of this Code section.*
- (d) *The limitation of liability provided for in subsection (c) of this Code section shall commence on the date of execution of the consent order provided for in subsection (b) of this Code section; provided, however, that such limitation shall be withdrawn automatically if the director determines at the end of the cleanup period or any extension thereof to certify that the property has not been brought into compliance with the cleanup standards. The limitation shall apply only to the parties to the consent order and for the hazardous waste, hazardous substance, or hazardous constituent addressed in the consent order. The limitation shall not apply with respect to any release occurring in conjunction with an activity related to a corrective action which results in injury to a person not a party to the consent order.*

12-8-97 G

*** CODE SECTION *** 08/27/01

12-8-97.

- (a) *Beginning on July 1, 1994, the division shall compile and update as necessary an inventory of ~~all known or suspected~~ sites where hazardous wastes, hazardous constituents, or hazardous substances have been disposed of or released in quantities deemed reportable by rules or regulations of the board, provided that no site shall be placed on the inventory after July 1, 2002, until the director makes a reasonable effort to identify all parties that would be subject to investigation and/or corrective action requirements under Section 12-8-96 and provides such parties notice of the intent to place the site on the inventory and provides such parties a reasonable opportunity not less than sixty days to assemble and provide information to the director whether hazardous wastes, hazardous constituents, or hazardous substances are present in quantities deemed reportable by rules of the board. The director shall retain and consider all written comments submitted by interested parties received prior to placing a site on the inventory, and shall reasonably respond to such comments and make such comments as part of the administrative record. At least annually, beginning July 1, 1994, the division shall send a copy of the inventory with the sites listed by county to the clerk of each superior court of the state, who shall place and maintain the most current copy of the inventory in the room or rooms in which the deed records of the county are kept. This inventory shall be called the hazardous site inventory.*

The inventory shall include:

- (1) *The name of the property or another description identifying the site;*
- (2) *The location of the site;*
- (3) *The name of the owner of the site at the time of the site's inclusion in the inventory;*
- (4) *A general description of the type and quantity of hazardous wastes, hazardous constituents, or hazardous substances known or suspected to be at the site;*
- (5) *A general description of possible or known threats to human health or the environment posed by the site;*
- (6) *The status of any cleanup activities conducted by any person;*
- (7) *A relative priority for cleanup;*
- (8) *If a site is determined, in accordance with rules and regulations promulgated by the board, to require corrective action, a designation that corrective action is needed and a summary of needed actions*
- (9) *If a site is considered not capable of posing or is no longer posing an environmental or human health hazard, a designation that no further action is required; and*
- (10) *The status of any actions contesting a determination that corrective action is needed.*

The division shall also publish annually a report of the fees collected and the funds appropriated to the hazardous waste trust fund and an accounting of all disbursements from such trust fund.

- (b) *After July 1, 1993, the property owner of any site listed on the inventory which is designated as having a known release and which is designated as needing corrective action shall include the following notice in any deed, mortgage, deed to secure debt, lease, rental agreement, or other instrument given or caused to be given by the property owner which creates an interest in or grants a use of the property: "This property has been listed on the state's hazardous site*

- inventory and has been designated as needing corrective action due to the presence of hazardous wastes, hazardous constituents, or hazardous substances regulated under state law. Contact the property owner or the Georgia Environmental Protection Division for further information concerning this property. This notice is provided in compliance with the Georgia Hazardous Site Response Act."*
- (c) *After July 1, 1993, each property owner who owns a site listed on the inventory which is designated as having a known release and which is designated as needing corrective action shall cause to be prepared an affidavit of such fact in recordable form as set forth in subsection (c) of Code Section 44-2-20 and shall file such affidavit with the clerk of the superior court of each county in which the real property or any part thereof lies. Such affidavit shall be recorded in the clerk's deed records pursuant to Code Section 44-2-20. Such affidavit shall include a statement that the property has been listed on the state's hazardous site inventory and has been designated as needing corrective action due to the presence of hazardous wastes, hazardous constituents, or hazardous substances regulated under state law. Such affidavit shall be filed with the clerk within 45 days after receipt of notice by the property owner that the director has designated the property as needing corrective action; provided, however, that neither the affidavit required by this subsection or the notice required by subsection (b) of this Code section shall be required until any contest under subsection (f) of this Code section has been resolved adversely to the property owner.*
- (d) *After July 1, 1993, each property owner who owns real property upon which hazardous wastes, hazardous constituents, or hazardous substances have been disposed of or released in amounts exceeding reportable quantities shall, within 30 days of receipt of knowledge by the property owner of the release or disposal, notify the division in writing on such forms as may be provided by the director. This notification shall include the location, type, quantity, and date of such disposal or release, if known, and a summary of actions taken to investigate, cleanup, or remediate the site. Such notification shall include a quadrangle map prepared in accordance with the National Ocean Survey/National Geodetic Survey or a Georgia Coordinate System pursuant to Article 2 of Chapter 4 of Title 44 that clearly indicates the location of the disposal or release; provided, however, that any property owner that has notified the United States Environmental Protection Agency under Section 103(c) of the federal Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended, may satisfy this notification requirement by submitting a copy of the 103(c) notice together with such quadrangle map.*
- (e) *The provisions of this code section shall not be applicable to emissions regulated under Article 1 of Chapter 9 of this title, "The Georgia Air Quality Act," point source discharges regulated under Article 2 of Chapter 5 of this title, the "Georgia Water Quality Control Act," or sites regulated solely by Chapter 13 of this title, the "Georgia Underground Storage Tank Act," or substances regulated under Chapter 12 of this title, the "Georgia Asbestos Safety Act."*
- (f) *The director shall provide a property owner with written notice of any determination to designate property as needing corrective action, including a statement concerning the requirements of subsections (b) and (c) of this Code section. The requirements of subsections (b) and (c) of this Code section shall be stayed by the filing of a petition for a hearing in accordance with Code Section 12-8-73 within 30 days of the issuance of the director's written notice of the director's determination to designate property as needing corrective action.*

Code Section 12-2-2(c)(3)(B)

(B) Persons are not aggrieved or adversely affected by ~~the listing of property in the hazardous site inventory in accordance with Code Section 12-8-97, nor are persons aggrieved or adversely affected by~~ an order of the director issued pursuant to Part 2 of Article 3 of Chapter 8 of this title, the "Georgia Hazardous Site Response Act," unless or until the director seeks to recover response costs, enforce the order, or recover a penalty for violation of such order; provided, however, that persons are aggrieved or adversely affected if the director makes a final determination to place a site on the hazardous site inventory in accordance with Code Section 12-8-97, or if the director designates property as needing corrective action pursuant to paragraph (8) of subsection (a) of Code Section 12-8-97. Any person aggrieved or adversely affected by such determination or designation shall be entitled to a hearing as provided in Code Section 12-8-73.