



04/21/2008

Mr. Greg Vierkant
Lucent Technologies, Inc.
2101 West Chesterfield Boulevard, Suite C100-110
Springfield, MO 65807-8672

Certified Mail Number: 7000 0600 0023 5186 3610

Re: Exempt Operation Status
E097-26087-00426

Dear Mr. Vierkant:

The application from Lucent Technologies, Inc., received on February 12, 2008, has been reviewed. Based on the data submitted and the provisions in 326 IAC 2-1.1-3, it has been determined that the following soil and groundwater remediation operation, located at 2525 North Shadeland Avenue, Indianapolis, Indiana, 46219 is classified as exempt from air pollution permit requirements:

- (a) One (1) Groundwater Extraction and Treatment System - Air Stripper Unit, identified as P&T (Pumping and Treatment), with a maximum water flow throughput capacity of capacity of 150 gallons per minute (gpm) and air flow capacity of 900 actual cubic foot per minute (acfm), and consisting of:
 - (1) Four (4) Groundwater Extraction Wells and one (1) Sump.
 - (2) One (1) Mixing and Equilization Tank in which extracted ground water is mixed with Sodium Hypochlorite Solution (NaClO), cleanout solids are removed into drums or vacuum trucks, and water/Sodium Hypochlorite Solution mix is transferred to one (1) Shallow Tray Air Stripper, exhausting to stack S2. Treated groundwater is discharged to sanitary sewer.
- (b) One (1) Sub-Slab Depressurization System - Vapor Extraction Unit, identified as SSDS, constructed in September of 2005, exhausting to stack S1, and consisting of: ten (10) interior Sub-Grade Vapor Extraction Sumps transferring soil gas vapors to ten (10) 20-gallon Condensate Knock-Out Tanks, and ten (10) Vacuum Blowers, with combined maximum capacity of 2,000 acfm.
- (c) Electrical Resistance Heating System - Vapor Extraction Unit, identified as ERH, constructed in January of 2008, exhausting to stack S3 and consisting of:
 - (1) One (1) Electrical Heat Exchanger with capacity of 1,160 standard cubic feet per minute (scfm) of steam and air flow.
 - (2) Four (4) 2, 000 pounds Granular Activated Carbon Vessels with combined capacity of 600 scfm vapor and air flow.
 - (3) One (1) Forced Draft Cooling Tower for steam and air flow cooling, using potable and recirculation water, with air flow capacity of 1,500 acfm and water flow capacity of 150 gallons per hour.



Air Quality Hotline: 317-327-4AIR | knozone.com

Department of Public Works
Office of Environmental Services

2700 Belmont Avenue
Indianapolis, IN 46221

317-327-2234
Fax 327-2274
TDD 327-5186
indygov.org/dpw

The following conditions shall be applicable:

- (a) Pursuant to 326 IAC 5-1-2 (Opacity Limitations) except as provided in 326 IAC 5-1-3 (Temporary Alternative Opacity Limitations), opacity shall meet the following:
 - (1) Opacity shall not exceed an average of thirty percent (30%) in any one (1) six (6) minute averaging period as determined in 326 IAC 5-1-4.
 - (2) Opacity shall not exceed sixty percent (60%) for more than a cumulative total of 15 minutes (60 readings) in a 6-hour period as measured according to 40 CFR 60, Appendix A, Method 9 or fifteen (15) one (1) minute nonoverlapping integrated averages for a continuous opacity monitor in a six (6) hour period.
- (b) Pursuant to 326 IAC 6-4 (Fugitive Dust Emissions Limitations), the source shall not allow fugitive dust to escape beyond the property line or boundaries of the property, right-of-way, or easement on which the source is located, in a manner that would violate 326 IAC 6-4.

This exemption is the second air approval issued to this source.

An application or notification shall be submitted in accordance with 326 IAC 2 to the Indiana Department of Environmental Management (IDEM) Office of Air Quality (OAQ) and Indianapolis Office of Environmental Services (OES) if the source proposes to construct new emission units, modify existing emission units, or otherwise modify the source.

Sincerely,

Original signed by:

Timothy J. Method
Environmental Coordinator

BG

cc: Files
Air Compliance – Matt Mosier
IDEM, OAQ – Mindy Hahn

**Indiana Department of Environmental Management
Office of Air Quality
and
City of Indianapolis
Office of Environmental Services**

Technical Support Document (TSD) for an Exemption

Source Description and Location
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Source Name: Lucent Technologies, Inc.
Source Location: 2525 North Shadeland Avenue, Indianapolis, Indiana 46219
County: Marion
SIC Code: 5541
Operation Permit No.: E097-26087-00426
Permit Reviewer: Boris Gorlin

On February 12, 2008, the Indiana Department of Environmental Management (IDEM), Office of Air Quality (OAQ), and Indianapolis Office of Environmental Services (OES) received an application from Lucent Technologies, Inc., for an existing soil and groundwater remediation source adding new emission units.

Existing Approvals

The source was issued an Exemption No. E097-15454-00426 on March 21, 2003. Since the issuance of that Exemption, the applicant expanded soil and groundwater remediation operation at the source site, and has applied, on February 12, 2008, for a new Exemption to incorporate the changes.

County Attainment Status

The source is located in Marion County.

Pollutant	Designation
SO ₂	Better than national standards.
CO	Attainment effective February 18, 2000, for the part of the city of Indianapolis bounded by 11 th Street on the north; Capitol Avenue on the west; Georgia Street on the south; and Delaware Street on the east. Unclassifiable or attainment effective November 15, 1990, for the remainder of Indianapolis and Marion County.
O ₃	Attainment effective November 8, 2007, for the 8-hour ozone standard. ¹
PM ₁₀	Unclassifiable effective November 15, 1990.
NO ₂	Cannot be classified or better than national standards.
Pb	Attainment effective July 10, 2000, for the part of Franklin Township bounded by Thompson Road on the south; Emerson Avenue on the west; Five Points Road on the east; and Troy Avenue on the north. Attainment effective July 10, 2000, for the part of Wayne Township bounded by Rockville Road on the north; Girls School Road on the east; Washington Street on the south; and Bridgeport Road on the west. The remainder of the county is not designated.

¹Attainment effective October 18, 2000, for the 1-hour ozone standard for the Indianapolis area, including Marion County, and is a maintenance area for the 1-hour ozone National Ambient Air Quality Standards (NAAQS) for purposes of 40 CFR 51, Subpart X*. The 1-hour designation was revoked effective June 15, 2005.
 Basic Nonattainment effective April 5, 2005 for PM2.5.

(a) Ozone Standards

- (1) On October 25, 2006, the Indiana Air Pollution Control Board finalized a rule revision to 326 IAC 1-4-1 revoking the one-hour ozone standard in Indiana.
- (2) On November 9, 2007, the Indiana Air Pollution Control Board finalized a temporary emergency rule to re-designate Boone, Clark, Elkhart, Floyd, LaPorte, Hamilton, Hancock, Hendricks, Johnson, Madison, Marion, Morgan, Shelby, and St. Joseph as attainment for the 8-hour ozone standard.
- (3) Volatile organic compounds (VOC) and Nitrogen Oxides (NOx) are regulated under the Clean Air Act (CAA) for the purposes of attaining and maintaining the National Ambient Air Quality Standards (NAAQS) for ozone. Therefore, VOC and NOx emissions are considered when evaluating the rule applicability relating to ozone. Marion County has been designated as attainment or unclassifiable for ozone. Therefore, VOC and NOx emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2.

(b) PM2.5

Marion County has been classified as nonattainment for PM2.5 in 70 FR 943 dated January 5, 2005. Until U.S. EPA adopts specific New Source Review rules for PM2.5 emissions, it has directed states to regulate PM10 emissions as a surrogate for PM2.5 emissions pursuant to the requirements of Nonattainment New Source Review, 326 IAC 2-1.1-5.

(c) Other Criteria Pollutants

Marion County has been classified as attainment or unclassifiable in Indiana for all other criteria pollutants. Therefore, these emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2.

Fugitive Emissions

The fugitive emissions of criteria pollutants and hazardous air pollutants are counted toward the determination of 326 IAC 2-1.1-3 (Exemptions) applicability.

Background and Description of Emission Units and Pollution Control Equipment

The IDEM, OAQ and OES have reviewed an application, submitted by Lucent Technologies, Inc. on February 12, 2008, relating to the construction and operation of new equipment at the soil and groundwater remediation facility.

The source includes the following existing soil and groundwater remediation facility emission units:

- (a) One (1) Groundwater Extraction and Treatment System - Air Stripper Unit, identified as P&T (Pumping and Treatment), with a maximum water flow throughput capacity of capacity of 150 gallons per minute (gpm) and air flow capacity of 900 actual cubic foot per minute (acfm), and consisting of:
 - (1) Four (4) Groundwater Extraction Wells and one (1) Sump.
 - (2) One (1) Mixing and Equilization Tank in which extracted ground water is mixed with Sodium Hypochlorite Solution (NaClO), cleanout solids are removed into drums or vacuum trucks, and water/Sodium Hypochlorite Solution mix is transferred to one (1) Shallow Tray Air Stripper, exhausting to stack S2. Treated groundwater is discharged to sanitary sewer.
- (b) One (1) Sub-Slab Depressurization System - Vapor Extraction Unit, identified as SSDS, constructed in September of 2005, exhausting to stack S1, and consisting of: ten (10) interior Sub-Grade Vapor Extraction Sumps transferring soil gas vapors to ten (10) 20-gallon Condensate

Knock-Out Tanks, and ten (10) Vacuum Blowers, with combined maximum capacity of 2,000 acfm.

- (c) Electrical Resistance Heating System - Vapor Extraction Unit, identified as ERH, constructed in January of 2008, exhausting to stack S3 and consisting of:
- (1) One (1) Electrical Heat Exchanger with capacity of 1,160 standard cubic feet per minute (scfm) of steam and air flow.
 - (2) Four (4) 2, 000 pounds Granular Activated Carbon Vessels with combined capacity of 600 scfm vapor and air flow.
 - (3) One (1) Forced Draft Cooling Tower for steam and air flow cooling, using potable and recirculation water, with air flow capacity of 1,500 acfm and water flow capacity of 150 gallons per hour.

Enforcement Issues

There are no pending enforcement actions related to this source.

Emission Calculations

See Appendices A (seven pages) and B (five pages) of this TSD for detailed emission calculations.

Permit Level Determination – Exemption

The following table reflects the unlimited potential to emit (PTE) of the entire source before controls. Control equipment is not considered federally enforceable until it has been required in a federally enforceable permit.

Process/Emission Unit	Potential To Emit of the Entire Source (tons/year)							Highest Single HAP (Trichloroethylene)
	PM	PM10*	SO2	NOx	VOC	CO	Total HAPs	
ERH System	Negl.	Negl.	Negl.	Negl.	2.849	Negl.	2.761	2.691
SSDS system	Negl.	Negl.	Negl.	Negl.	0.287	Negl.	0.238	0.230
P&T system	Negl.	Negl.	Negl.	Negl.	0.256	Negl.	Negl.	Negl.
Sumps	Negl.	Negl.	Negl.	Negl.	0.814	Negl.	Negl.	Negl.
Fugitive Emissions	Negl.	Negl.	Negl.	Negl.	Negl.	Negl.	Negl.	Negl.
Total PTE of Entire Source	Negl.	Negl.	Negl.	Negl.	4.206	Negl.	2.999	2.691

negl. = negligible
 * Under the Part 70 Permit program (40 CFR 70), particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers (PM10), not particulate matter (PM), is considered as a "regulated air pollutant". US EPA has directed states to regulate PM10 emissions as surrogate for PM2.5 emissions.

- (a) The potential to emit (PTE) (as defined in 326 IAC 2-1.1-1(16)) of all regulated criteria pollutants are less than the levels listed in 326 IAC 2-1.1-3(e)(1). Therefore, the source is subject to the provisions of 326 IAC 2-1.1-3 (Exemptions).

- (b) The potential to emit (PTE) (as defined in 326 IAC 2-1.1-1(16)) of any single HAP is less than ten (10) tons per year and the PTE of a combination of HAPs is less than twenty-five (25) tons per year. Therefore, this source is an area source under Section 112 of the Clean Air Act (CAA) and not subject to the provisions of 326 IAC 2-7.
- (c) Pursuant to 326 IAC 2-1.1-3(d)(4), as a new source with potential to emit less than ten (10) tons per year of a single hazardous air pollutant (HAP), as defined under Section 112(b) of the Clean Air Act, or twenty-five (25) tons per year of any combination of HAPs, and not otherwise required to apply for and obtain a registration or permit, this source will be issued an Exemption.

Federal Rule Applicability Determination

- (a) There are no New Source Performance Standards (NSPS)(40 CFR Part 60) (326 IAC 12) included in this Exemption.
- (b) The requirements of 40 CFR Part 63 NESHAP, Subpart GGGGG (National Emission Standards for Hazardous Air Pollutants: Site Remediation) are not included in this Exemption for this soil and groundwater remediation source because it is not a major source of HAP as defined in 40 CFR Part 63, §63.7881(a)(3).
- (c) The requirements of 40 CFR Part 63 NESHAP, Subpart Q (National Emission Standards for Hazardous Air Pollutants for Industrial Process Cooling Towers) are not included in this Exemption for one (1) new Forced Draft Cooling Tower, part of the Electrical Resistance Heating System - Vapor Extraction Unit, identified as ERH, because this cooling tower will not be operated with chromium-based water treatment chemicals and is not a major source or integral part of facility that is a major source as defined in 40 CFR Part 63, §63.401.
- (d) There are no other National Emission Standards for Hazardous Air Pollutants (NESHAPs) (326 IAC 14, 326 IAC 20 and 40 CFR Part 63) included in the Exemption.

State Rule Applicability Determination

The following state rules are applicable to the source:

- (a) 326 IAC 2-1.1-3 (Exemptions)
Exemption applicability is discussed under the Permit Level Determination – Exemption section above.
- (b) 326 IAC 2-4.1 (Major Sources of Hazardous Air Pollutants (HAP))
The potential to emit of any single HAP is less than ten (10) tons per year and the potential to emit of a combination of HAPs is less than twenty-five (25) tons per year (see Appendix B, page 1 of 5). Therefore, this source is an area source under Section 112 of the Clean Air Act (CAA) and not subject to the provisions of 326 IAC 2-4.1.
- (c) 326 IAC 2-6 (Emission Reporting)
Pursuant to 326 IAC 2-6-1, this source is not subject to this rule, because it is not required to have an operating permit under 326 IAC 2-7 (Part 70), it is not located in Lake, Porter, or LaPorte County, and it does not emit lead into the ambient air at levels equal to or greater than 5 tons per year. Therefore, 326 IAC 2-6 does not apply.
- (d) 326 IAC 5-1 (Opacity Limitations)
Pursuant to 326 IAC 5-1-2 (Opacity Limitations), except as provided in 326 IAC 5-1-3 (Temporary Alternative Opacity Limitations), opacity shall meet the following, unless otherwise stated in this Exemption:
 - (1) Opacity shall not exceed an average of thirty percent (30%) in any one (1) six (6) minute averaging period as determined in 326 IAC 5-1-4.

- (2) Opacity shall not exceed sixty percent (60%) for more than a cumulative total of fifteen (15) minutes (sixty (60) readings as measured according to 40 CFR 60, Appendix A, Method 9 or fifteen (15) one (1) minute nonoverlapping integrated averages for a continuous opacity monitor) in a six (6) hour period.
- (e) 326 IAC 6.5 (Particulate Matter Limitations Except Lake County)
This source does not have the potential to emit particulate matter 100 tons per year or more, and since potential PM emissions are less than 10 tons, then actual PM emission will be less than 10 tons. Therefore, 326 IAC 6.5-1 does not apply.
- (f) 326 IAC 6-4 (Fugitive Dust Emissions Limitations)
Pursuant to 326 IAC 6-4 (Fugitive Dust Emissions Limitations), the source shall not allow fugitive dust to escape beyond the property line or boundaries of the property, right-of-way, or easement on which the source is located, in a manner that would violate 326 IAC 6-4.
- (g) 326 IAC 6-5 (Fugitive Particulate Matter Emission Limitations)
The source is not subject to the requirements of 326 IAC 6-5, because the source does not have potential fugitive particulate emissions greater than 25 tons per year. Therefore, 326 IAC 6-5 does not apply.
- (i) 326 IAC 8-1-6 (VOC Rules: General Reduction Requirements for New Facilities)
Each of the emission units at this source is not subject to the requirements of 326 IAC 8-1-6, since the unlimited potential to emit of VOC from each emission unit is less than twenty-five (25) tons per year (See Appendix A, page 1 of 7).
- (j) 326 IAC 12 (New Source Performance Standards)
See Federal Rule Applicability Section of this TSD.
- (k) 326 IAC 20 (Hazardous Air Pollutants)
See Federal Rule Applicability Section of this TSD.

Conclusion and Recommendation

Unless otherwise stated, information used in this review was derived from the application and additional information submitted by the applicant. An application for the purposes of this review was received on February 12, 2008.

The construction and operation of this source shall be subject to the conditions of the attached proposed Exemption No. 097-26087-00426. The staff recommends to the Commissioner that this Exemption be approved.

OES Contact

- (a) Questions regarding this Exemption can be directed to Boris Gorlin at the Indianapolis OES, Air Permits, 2700 South Belmont Avenue, Indianapolis, IN 46221 or by telephone at (317) 327-2280.
- (b) A copy of the findings is available on the Internet at: www.idem.in.gov.
- (c) For additional information about air permits and how the public and interested parties can participate, refer to the IDEM's Guide for Citizen Participation and Permit Guide on the Internet at: www.idem.in.gov.

Appendix A: VOC Emission Calculations

Company Name: Lucent Technologies, Inc.

Address City IN Zip: 2525 N. Shadeland Avenue, Indianapolis, IN 46219

Exemption Number: E097-26087-00426

Reviewed and Verified by: Boris Gorlin

Total source wide VOC Emission

ERH System	2.849	ton/yr
SSDS system	0.287	ton/yr
P&T system	0.256	ton/yr
Sumps	0.814	ton/yr
Total:	4.206	ton/yr

Contaminant Mass Calculations
Lucent Indyworks
Indianapolis, Indiana

Appendix A: VOC Emission Calculations								
				Company Name: Lucent Technologies, Inc.				
				Address City IN Zip: 2525 N. Shadeland Avenue, Indianapolis, IN 46219				
				Exemption Number: E097-26087-00426				
				Reviewed and Verified by: Boris Gorlin				
Table 1A								
Potential to Emit Calculations - ERH Soil								
Lucent Indyworks								
Indianapolis, Indiana								
Contaminant	Depth (ft bgs)*	Contour (ug/kg)	Area Enclosed (feet squared)	Thickness (feet)	Volume (cubic feet)	Bulk Density (kg/cubic feet) ¹	Contaminant Mass (kg) ²	Total Contaminant Mass (kg)
Total VOCs	2-22	1,000,000	1,822	20	36,440	46.9	1538	2,585
		100,000	9,621	20	192,420	46.9	812	
		10,000	27,477	20	549,540	46.9	232	
		1,000	2,785	20	55,700	46.9	2	
		100	1,270	20	25,400	46.9	0.11	
		10	808	20	16,160	46.9	0.01	
* ft bgs - feet below ground surface								
Table 1B								
Potential to Emit Calculations - ERH Groundwater								
Lucent Indyworks								
Indianapolis, Indiana								
Contaminant	Depth (ft bgs) ³	Contour (ug/l, May 2007))	Area Enclosed (feet squared)	Thickness (feet)	Volume (cubic feet)	Porosity	Contaminant Mass (kg) ⁴	Total Contaminant Mass (kg)
Total VOCs	10-22	10,000	1,596	12	19,152	0.37	2.006	5.3
		5,000	3,630	12	43,560	0.37	2.281	
		1,000	6,491	12	77,892	0.37	0.816	
		100	16,243	12	194,916	0.37	0.204	
Total Potential to Emit from the ERH System			2,590 kg	or	5,698 lbs	or	2.849 ton	
Potential to Emit per year			2,590 kg	or	5,698 lbs	or	2.849 tons	
Note:								
Volume = Area enclosed by the contour* Thickness of the contaminated area								
Contaminated mass in Soil = summation of contaminant enclosed by each contour * Bulk Density of Soil * Contour Value * Percentage solids								
Contaminated mass in Groundwater = summation of contaminant enclosed by each contour * Porosity * Contour Value								
¹ Per Principles and Practices, Geotechnical Engineering, Donald Cudotu								
² Assumed an average percentage moisture of 10% and hence average percentage solids of 90%								
³ Assumed water table at an average depth of 10 feet below ground surface								
⁴ Assumed 28.31*porosity liters of water per cubic feet of soil								

Appendix A: VOC Emission Calculations						
			Company Name: Lucent Technologies, Inc.			
			Address City IN Zip: 2525 N. Shadeland Avenue, Indianapolis, IN 46219			
			Exemption Number: E097-26087-00426			
			Reviewed and Verified by: Boris Gorlin			
Table 3						
Potential to Emit Calculations - Pump and Treat System						
Lucent Indyworks						
Indianapolis, Indiana						
Influent Total VOC Concentration			Effluent Total VOC Concentration		Difference	
2/26/2007			2/26/2007			
ug/L			ug/L		ug/L	
1662			0		1662	
Pumping Well	Maximum Pumping Rate (gallons per minute)	Pumping Rate (liter per year)	Contaminant Mass per year (kg)	Total Contaminant Mass per year (kg)	Number of years the system is expected to run	Total Contaminant Mass (kg)
PW-5	14	27,961,920	46	232	2	465
PW-6	14	27,961,920	46			
PW-7	14	27,961,920	46			
PW-8	14	27,961,920	46			
Sump-1	14	27,961,920	46			
Total Potential to emit from P&T system		4.65E+02 kg	or	1.02E+03 lbs	or	5.11E-01 tons
Potential to Emit per year		2.32E+02 kg	or	5.11E+02 lbs	or	2.56E-01 tons
Notes:						
Maximum pumping rate is based on maximum design flow rate for system.						
Total Contaminant Mass in Water = Difference in Influent and Effluent Concentrations * Pumping rate						

Appendix A: VOC Emission Calculations				Page 5 of 7	
Company Name:		Lucent Technologies, Inc.			
Address City IN Zip:		2525 N. Shadeland Avenue, Indianapolis, IN 46219			
Exemption Number:		E097-26087-00426			
Reviewed and Verified by:		Boris Gorlin			
Sample source vapor concentration calculation sheet					
	Csource	=	$\frac{H * Cr * \rho}{\theta_w + K_d * \rho + H * \theta_a}$		
Henry's Constant, H			1.1	dimensionless	
Initial Soil Concentration, Cr			100000	ug/kg	1.00E-04 g/g
Soil dry bulk density, ρ			1.63	g/cm ³	
Soil water-filled porosity, θ_w			0.197	cm ³ /cm ³	
Total porosity, n			0.385	cm ³ /cm ³	
Soil air-filled porosity, $\theta_a = n - \theta_w$			0.188	cm ³ /cm ³	
Soil organic carbon partition coefficient, Koc			18.6	cm ³ /g	
Soil organic carbon weight fraction, foc			0.002	dimensionless	
Soil-water partition coefficient, (=Koc*foc)			0.0372	cm ³ /g	
	Csource	=	3.86E-04	g/cm ³	
			1.09E+07	ug/feet ³	

Appendix A: VOC Emission Calculations				Page 6 of 7			
		Company Name: Lucent Technologies, Inc.					
		Address City IN Zip: 2525 N. Shadeland Avenue, Indianapolis, IN 46219					
		Exemption Number: E097-26087-00426					
		Reviewed and Verified by: Boris Gorlin					
Location	Nearest indoor air point	Greatest reported concentration at nearest indoor air point (ug/m3)	Concentration conversion to ug/ft3	Concentration conversion to lbs/ft3	Flow Rate (max flow stated as 212 SCFM by manufacturer)	Flow rate per year (SCFY)	Conversion to lbs/yr
DS-1	IA-6	84.132	2.382352986	5.25214E-09	212	111427200	0.585230741
DS-2	IA-6/IA-7	84.132	2.382352986	5.25214E-09	212	111427200	0.585230741
DS-3	IA-7	38.782	1.098183967	2.42106E-09	212	111427200	0.269771533
DS-4	IA-8	48.232	1.365778173	3.01099E-09	212	111427200	0.335506693
DS-5	IA-5	54.432	1.541342625	3.39804E-09	212	111427200	0.378634523
DS-6	IA-5	54.432	1.541342625	3.39804E-09	212	111427200	0.378634523
DS-7	IA-4	43.12	1.22102245	2.69187E-09	212	111427200	0.299947102
DS-8	IA-3	45.232	1.280827631	2.82371E-09	212	111427200	0.314638388
DS-9	IA-1	18.942	0.536377719	1.1825E-09	212	111427200	0.131762477
DS-10	IA-2	57.195	1.619582074	3.57053E-09	212	111427200	0.397854232
						Summation lbs/yr	3.677210952
						Potential Tons/year	0.001838605
Conversion Factors							
micrograms to grams	0.000001						
grams to pounds	0.0022046						
year to minutes	525600						
m3 to ft3	0.028316847						

Appendix A: VOC Emission Calculations							Page 7 of 7	
			Company Name: Lucent Technologies, Inc.					
			Address City IN Zip: 2525 N. Shadeland Avenue, Indianapolis, IN 46219					
			Exemption Number: E097-26087-00426					
			Reviewed and Verified by: Boris Gorlin					
Location	Greatest reported concentration at Sump After operating system (ug/m3)	Concentration conversion to ug/ft3	Concentration conversion to lbs/ft3	Flow Rate (max flow stated as 212 SCFM by manufacturer)	Flow rate per year (SCFY)	Conversion to lbs/yr		
DS-1	125000	3539.605896	7.80342E-06	212	111427200	869.5127016		
DS-2	5800	164.2377136	3.62078E-07	212	111427200	40.34538935		
DS-3	13400	379.4457521	8.36526E-07	212	111427200	93.21176161		
DS-4	6000	169.901083	3.74564E-07	212	111427200	41.73660968		
DS-5	6100	172.7327677	3.80807E-07	212	111427200	42.43221984		
DS-6	5800	164.2377136	3.62078E-07	212	111427200	40.34538935		
DS-7	0	0	0	212	111427200	0		
DS-8	4800	135.9208664	2.99651E-07	212	111427200	33.38928774		
DS-9	5500	155.7426594	3.4335E-07	212	111427200	38.25855887		
DS-10	61000	1727.327677	3.80807E-06	212	111427200	424.3221984		
						Summation lbs/yr	1623.554116	
						Potential Tons/year	0.811777058	
Conversion Factors								
micrograms to grams	0.000001							
grams to pounds	0.0022046							
year to minutes	525600							
m3 to ft3	0.028316847							

Appendix B: Emission Calculations

Company Name: Lucent Technologies, Inc.
Address City IN Zip: 2525 N. Shadeland Avenue, Indianapolis, IN 46219
Exemption Number: E097-26087-00426
Reviewed and Verified by: Boris Gorlin

Hazardous Air Pollutant	Potential to Emit (ton/yr)	Table	
1,1,1-Trichloroethane	1.7E-05	1D	
1,1,1-Trichloroethane	2.93E-03	2D	2.1E-02
1,1,1-Trichloroethane (Methyl chloroform)	1.8E-02	1C	
1,1,2-Trichloroethane	8.0E-05	1C	8.0E-05
1,1-Dichloroethane	1.7E-04	1D	
1,1-Dichloroethane	2.07E-03	2D	
1,1-Dichloroethane (Ethylidene dichloride)	9.6E-03	1C	1.2E-02
1,1-Dichloroethene	2.8E-06	1D	
1,1-Dichloroethene	8.17E-06	2C	
1,1-Dichloroethene (Vinylidene chloride, 1,1-Dichloroethylene)	5.3E-05	1C	
1,2-Dichloroethane (Ethylene dichloride)	1.6E-04	1C	1.6E-04
2-Butanone (MEK)	1.1E-04	1C	1.1E-04
Benzene	3.8E-05	1C	3.8E-05
Carbon tetrachloride	4.3E-05	1C	4.3E-05
Chlorobenzene	7.6E-07	1C	7.6E-07
Chloroethane	9.6E-06	1D	
Chloroethane	5.00E-04	2D	5.8E-04
Chloroethane (Ethyl chloride)	7.2E-05	1C	
Ethylbenzene	1.4E-04	1C	1.4E-04
Isopropylbenzene (Cumene)	3.1E-05	1C	3.1E-05
m&p-Xylene	5.8E-04	1C	5.8E-04
Methylene chloride	9.4E-05	1D	
Methylene chloride (Dichloromethane)	5.8E-03	1C	5.9E-03
Naphthalene	2.8E-04	1C	2.8E-04
o-Xylene	2.6E-04	1C	2.6E-04
Tetrachloroethene	1.1E-05	1D	
Tetrachloroethene (Perchloroethylene)	3.2E-02	1C	3.2E-02
Toluene	2.3E-03	1C	
Toluene	7.2E-06	1D	2.3E-03
Trichloroethene	7.5E-04	1D	
Trichloroethene	2.04E-02	2D	2.922
Trichloroethene	2.10E-01	2C	
Trichloroethene (Trichloroethylene)	2.7E+00	1C	
Vinyl chloride	6.7E-04	1C	
Vinyl chloride	2.9E-04	1D	3.0E-03
Vinyl chloride	2.05E-03	2D	
Xylene (Total)	3.7E-05	1C	3.7E-05

Max Individual HAP (Trichloroethylene), ton/yr: 2.922
Total HAP Emission, ton/yr: 2.999

Appendix B: Emission Calculations										
Company Name: Lucent Technologies, Inc.										
Address City IN Zip: 2525 N. Shadeland Avenue, Indianapolis, IN 46219										
Exemption Number: E097-26087-00426										
Reviewed and Verified by: Boris Gorlin										
Table 2C (SSDS Soil HAPs)										
Potential to Emit Calculations - SSDS Soils										
Lucent Indyworks										
Indianapolis, Indiana										
Hazardous Air Pollutant	HAP Concentration ^a	Unit	Total VOC concentration (ug/kg) ^b	Mass Fraction	Total VOC Mass (kg) ^c	HAP Mass (kg)	Number of years the system is expected to run	Potential to Emit per year (kg)	Potential to Emit per year (lbs)	Potential to Emit per year (tons)
1,1-Dichloroethene	6.9	ug/kg	192734	0.00004	830	0.03	4	7.43E-03	1.63E-02	8.17E-06
Trichloroethene	177299.92	ug/kg	192734	0.91992	830	763.17	4	1.91E+02	4.20E+02	2.10E-01
Total Potential HAP Emissions from Soil by SSD System:			763 kg or		1679 lbs or			8.40E-01 tons		
Potential HAP Emissions per year from soil by SSD system:			191 kg/yr or		420 lbs/yr or			2.10E-01 tons/yr		
Notes:										
^a Equals the sum of each individual HAP chemical concentration (i.e., TCE) detected in all unsaturated soil samples collected within the SSDS zone of influence.										
^b Equals the sum of the total VOC concentration detected in all unsaturated soil samples collected within the SSDS zone of influence.										
^c Total VOC mass calculated for treatment area as shown in Table 2A.										

Company Name: Lucent Technologies, Inc.
Address City IN Zip: 2525 N. Shadeland Avenue, Indianapolis, IN 46219
Exemption Number: E097-26087-00426
Reviewed and Verified by: Boris Gorlin

Table 2D

Potential to Emit Calculations - SSDS Groundwater
 Lucent Indyworks
 Indianapolis, Indiana

Hazardous Air Pollutant	HAP Concentration ^a Unit	Total VOC concentration (ug/l) ^b	Mass Fraction	Total VOC Mass (kg) ^c	HAP Mass (kg)	Number of years the system is expected to run	Potential to Emit per year (kg)	Potential to Emit per year (lbs)	Potential to Emit per year (tons)
1,1,1-Trichloroethane	1570 ug/kg	31781	0.049	215	10.6	4	2.66E+00	5.85E+00	2.93E-03
1,1-Dichloroethane	1113 ug/kg	31781	0.035	215	7.5	4	1.89E+00	4.15E+00	2.07E-03
Chloroethane	268 ug/kg	31781	0.008	215	1.8	4	4.54E-01	9.99E-01	5.00E-04
Trichloroethene	10940 ug/kg	31781	0.344	215	74.2	4	1.85E+01	4.08E+01	2.04E-02
Vinyl chloride	1102 ug/kg	31781	0.035	215	7.5	4	1.87E+00	4.11E+00	2.05E-03
									2.04E-02

Total Potential HAP Emissions from groundwater by SSD System: **102 kg or** **224 lbs or** **1.12E-01 tons**
Potential HAP Emissions per year from groundwater by SSD system: **25 kg/yr or** **56 lbs/yr or** **2.79E-02 tons/yr**

Notes:

- ^a Equals the sum of each individual HAP chemical concentration (i.e., TCE) detected in all groundwater samples collected within the SSDS zone of influence.
- ^b Equals the sum of the total VOC concentration detected in all groundwater samples collected within the SSDS zone of influence.
- ^c Total VOC mass calculated for treatment area as shown in Table 2B.

Appendix B: Emission Calculations

Company Name: Lucent Technologies, Inc.
 Address City IN Zip: 2525 N. Shadeland Avenue, Indianapolis, IN 46219
 Exemption Number: E097-26087-00426
 Reviewed and Verified by: Boris Gorlin

Table 1C
 Potential to Emit Calculations - ERH Soil
 Lucent Indyworks
 Indianapolis, Indiana

Hazardous Air Pollutant	HAP Concentration ^a	Unit	Total VOC concentration (ug/kg) ^b	Mass Fraction	Total VOC Mass (kg) ^c	HAP Mass (kg)	Potential to Emit per year (kg)	Potential to Emit per year (lbs)	Potential to Emit per year (tons)
1,1,1-Trichloroethane (Methyl chloroform)	147643.6	ug/kg	23690008	0.006232315	2585	16.11	1.6E+01	3.5E+01	1.8E-02
1,1,2-Trichloroethane	670.5	ug/kg	23690008	2.83031E-05	2585	0.07	7.3E-02	1.6E-01	8.0E-05
1,1-Dichloroethane (Ethylidene dichloride)	79703.6	ug/kg	23690008	0.00336444	2585	8.70	8.7E+00	1.9E+01	9.6E-03
1,1-Dichloroethene (Vinylidene chloride, 1,1-Dichloroethylene)	444	ug/kg	23690008	1.87421E-05	2585	0.05	4.8E-02	1.1E-01	5.3E-05
1,2-Dichloroethane (Ethylene dichloride)	1329.3	ug/kg	23690008	5.61123E-05	2585	0.15	1.5E-01	3.2E-01	1.6E-04
2-Butanone (MEK)	920	ug/kg	23690008	3.88349E-05	2585	0.10	1.0E-01	2.2E-01	1.1E-04
Benzene	315.8	ug/kg	23690008	1.33305E-05	2585	0.03	3.4E-02	7.6E-02	3.8E-05
Carbon tetrachloride	357	ug/kg	23690008	1.50696E-05	2585	0.04	3.9E-02	8.6E-02	4.3E-05
Chlorobenzene	6.3	ug/kg	23690008	2.65935E-07	2585	0.00	6.9E-04	1.5E-03	7.6E-07
Chloroethane (Ethyl chloride)	601	ug/kg	23690008	2.53693E-05	2585	0.07	6.6E-02	1.4E-01	7.2E-05
Ethylbenzene	1198	ug/kg	23690008	5.05698E-05	2585	0.13	1.3E-01	2.9E-01	1.4E-04
Isopropylbenzene (Cumene)	260	ug/kg	23690008	1.09751E-05	2585	0.03	2.8E-02	6.2E-02	3.1E-05
m&p-Xylene	4844	ug/kg	23690008	0.000204474	2585	0.53	5.3E-01	1.2E+00	5.8E-04
Methylene chloride (Dichloromethane)	48483	ug/kg	23690008	0.002046559	2585	5.29	5.3E+00	1.2E+01	5.8E-03
Naphthalene	2346.6	ug/kg	23690008	9.90544E-05	2585	0.26	2.6E-01	5.6E-01	2.8E-04
o-Xylene	2190.4	ug/kg	23690008	9.24609E-05	2585	0.24	2.4E-01	5.3E-01	2.6E-04
Tetrachloroethene (Perchloroethylene)	263536.8	ug/kg	23690008	0.011124386	2585	28.76	2.9E+01	6.3E+01	3.2E-02
Toluene	18909.5	ug/kg	23690008	0.000798206	2585	2.06	2.1E+00	4.5E+00	2.3E-03
Trichloroethene (Trichloroethylene)	22415790.91	ug/kg	23690008	0.946212889	2585	2445.96	2.4E+03	5.4E+03	2.7E+00
Vinyl chloride	5607.4	ug/kg	23690008	0.000236699	2585	0.61	6.1E-01	1.3E+00	6.7E-04
Xylene (Total)	312	ug/kg	23690008	1.31701E-05	2585	0.03	3.4E-02	7.5E-02	3.7E-05
									2.7E+00

Total Potential HAP Emissions from Soil by ERH System: 2509 kg or 5520 lbs or 2.760 tons
Potential HAP Emissions per year from soil by ERH system: 2509 kg/yr or 5520 lbs/yr or 2.760 tons/yr

Notes:
^a Equals the sum of each individual HAP chemical concentration (i.e., TCE) detected in all unsaturated soil samples collected within the ERH system zone of influence.
^b Equals the sum of the total VOC concentration detected in all unsaturated soil samples collected within the ERH system zone of influence.
^c Total VOC mass calculated for treatment area as shown in Table 1A.

Company Name: Lucent Technologies, Inc.
Address City IN Zip: 2525 N. Shadeland Avenue, Indianapolis, IN 46219
Exemption Number: E097-26087-00426
Reviewed and Verified by: Boris Gorlin

Table 1D
 Potential to Emit Calculations - ERH Groundwater
 Lucent Indyworks
 Indianapolis, Indiana

Hazardous Air Pollutant	HAP Concentration ^a	Unit	Total VOC concentration (ug/l)		Total VOC Mass		Potential to Emit per year	Potential to Emit per year	Potential to Emit per year
			^b	Mass Fraction	(kg) ^c	HAP Mass (kg)	(kg)	(lbs)	(tons)
1,1,1-Trichloroethane	96.6	ug/l	33036.1	0.00292407	5.3	1.6E-02	1.6E-02	3.4E-02	1.7E-05
1,1-Dichloroethane	935.9	ug/l	33036.1	0.02832962	5.3	1.5E-01	1.5E-01	3.3E-01	1.7E-04
1,1-Dichloroethene	15.6	ug/l	33036.1	0.00047221	5.3	2.5E-03	2.5E-03	5.5E-03	2.8E-06
Chloroethane	54.1	ug/l	33036.1	0.0016376	5.3	8.7E-03	8.7E-03	1.9E-02	9.6E-06
Methylene chloride	530	ug/l	33036.1	0.01604306	5.3	8.5E-02	8.5E-02	1.9E-01	9.4E-05
Tetrachloroethene	64.2	ug/l	33036.1	0.00194333	5.3	1.0E-02	1.0E-02	2.3E-02	1.1E-05
Toluene	40.7	ug/l	33036.1	0.00123199	5.3	6.5E-03	6.5E-03	1.4E-02	7.2E-06
Trichloroethene	4262.5	ug/l	33036.1	0.12902552	5.3	6.8E-01	6.8E-01	1.5E+00	7.5E-04
Vinyl chloride	1643.3	ug/l	33036.1	0.04974255	5.3	2.6E-01	2.6E-01	5.8E-01	2.9E-04
								Worst Case:	7.5E-04

Total Potential HAP Emissions from Groundwater by ERH System: 1.2 kg or 2.7 lbs or 1.4E-03 tons
Potential HAP Emissions per year from groundwater by ERH System: 1.2 kg/yr or 2.7 lbs/yr or 1.4E-03 tons/yr

Notes:
^a Equals the sum of each individual HAP chemical concentration (i.e., TCE) detected in all groundwater samples collected within the ERH system zone of influence.
^b Equals the sum of the total VOC concentration detected in all groundwater samples collected within the ERH system zone of influence.
^c Total VOC mass calculated for treatment area as shown in Table 1B.