I. Response to Comments on January 30, 1998 "Draft Demographic Information."

A. Additional Comparisons.

1. Comment: EPA should compare the population around Shintech to the State, the Industrial Corridor, and St. James Parish because the Complaint alleges that LDEQ's permitting of Shintech will create a disparate impact on the residents around the proposed Shintech facility. (2/18/98)

Response: The complaint is being investigated in accordance with EPA's Title VI Interim Guidance which states that "[O]rdinarily, OCR will entertain cases only in which the permitted facility at issue is one of several facilities, which together present a cumulative burden or which reflect a pattern of disparate impact. In some rare instances, EPA may need to determine whether the impacts of a single permit, standing alone, may be considered adequate to support a disparate impact claim. While such a case has not yet been presented to EPA, it might, for example, involve a permitted activity that is unique (*i.e.*, "one of a kind") under a recipient's program."

The proposed Shintech facility is not a one of a kind facility under LDEQ's permitting program. There are other permitted facilities that have characteristics in common with the proposed Shintech facility such as toxic air emissions and similar activities (i.e., same SIC codes). Additionally, the Complainants do not argue that the proposed Shintech facility is unique, but that it will add to the disproportionate impact from toxic emissions from several other facilities already operating in the Parish or the State (i.e., EDC/Vinyl Chloride plants).

OCR's facility distribution analysis does allow EPA to compare the demographic characteristics of the proposed Shintech facility to other facilities, as well as the mean and median demographic characteristics for various facility universes in different geographic areas. For example the introduction to the facility distribution charts in the April "Draft Revised Demographic Information" noted that "the proportion of African-Americans within 2 miles of the proposed Shintech facility is 80.2%, or 2.6 times the State average. This would place the facility above the 90th percentile for all TRI facilities Statewide and between the 75th and 90th percentiles for facilities releasing more than 100,000 pounds to air."

2. Comment: Racial demographics around existing EDC/Vinyl Chloride plants demonstrate disparate impacts and permitting Shintech would exacerbate this disparate impact. (3/7/98)

Response: EPA examined Louisiana TRI facilities reporting one of the same chemical manufacturing Standard Industrial Classification (SIC) codes (i.e., 2812[1], 2821[2], and/or 2869[3]) as the proposed Shintech facility to analyze demographic characteristics near facilities reporting the same or similar manufacturing activities. OCR has not drawn any conclusions based on its Title VI investigation.

3. Comment: DEQ's own study of proximity of minority block groups to TRI facilities supports a finding of disparate impact. (3/7/98)

Response: EPA is reviewing the report to determine the evidentiary merit of the information.

4. Comment: St. James Parish's reported TRI Releases Per Manufacturing Job are 5 to 6 times higher than the Louisiana average and 30 to 50 times higher than the U.S. average. (3/7/98)

Response: EPA is reviewing the report to determine the evidentiary merit of the information.

B. Adverse Impacts.

5. Comment: "It was our understanding that the anticipated report would improve and refine the analysis originally presented as the Potential Health Risk Index (HRI) and the Potential Environmental Justice Index (EJI) by Region 6 Toxicologist Gerald Carney in his draft dated May 7, 1997." (3/4/98)

Response: The Relative Burden index developed by EPA's Office of Research and Development (ORD) and included in the April, 1998 updated document shares some key features with the Region 6 HRI. Both rely on population estimates derived from Geographic Information System (GIS) analyses of residential populations near TRI-reporting facilities. Both use a set of chronic human health relative toxicity values to develop an estimate of weighted impacts associated with TRI reported emissions.

However, the two approaches differ significantly in several respects. For example, the ORD approach uses a more recent set of toxicity data and focuses exclusively on air releases, instead of both air and direct water releases with exposure potential adjustment factors. The ORD approach most closely parallels the Region 6 approach in the calculation of the Degree of Impact (DI). For air, the DI for each chemical released is the sum of the pounds released multiplied by its relative toxicity factor times 95%. The total DI for air is the sum across chemicals released from a facility. This value is then converted to a score in the range of 1 - 5. In its final calculation, the HRI also

[1] Plastics and synthetic resins, including vinyl resins (but not fabricated plastics products made from resins).

[2] Industrial inorganic chemicals, including chlorine and caustic soda.

[3] Industrial organic chemicals, "not elsewhere classified."

includes some additional factors such as the proportion of the young and elderly population and of low-income households. Each of the component HRI values are separately calculated and converted to scores with a possible value range of 0 - 100 for the entire HRI. The Region 6 Potential Environmental Justice Index is calculated separately from the HRI using factor including the exposed populations, minority status, and economic status.

The ORD approach to estimate burden considers toxicity for TRI chemical releases in a similar way as the DI calculation and distributes the toxicity weighted emissions over the proximate areas to develop an estimated total burden based on pounds per square mile. This number is divided by 100,000 to make it more computationally tractable. Since Title VI focuses on discrimination based on race, color, or national origin, the ORD analysis does not include consideration similar to the portion of the HRI analysis concerned with the prevalence of young, elderly, and low-income populations.

The ORD approach accumulates the total toxicity-weighted emissions burden for each facility, multiplied by the proximate population broken into racial groups across all the (sometimes overlapping) proximate areas. That number is then divided by the total proximate population for each racial group creating an average burden separately for African Americans and non-African Americans in the proximate population. This allows comparing the relative burden for these two groups within the proximate areas.

6. Comment: EPA should not engage in a risk assessment. (3/12/98)

Response: EPA is not conducting a risk assessment, nor does EPA believe one required under Title VI. The law requires addressing how adverse impact is distributed among groups by race, color, or national origin and measurable risk is not the only available indicator of adverse impact. Distance from a facility coupled with the patterns of how chemicals of normalized toxicity distribute themselves is another measure.

7. Comment: EPA should consider the effects of Shintech on vulnerable sub-populations in St. James Parish (e.g., fetuses, neonates, infants, pregnant women), specifically the children at Romeville Elementary School and 5th Ward Elementary and Head Start School. (2/18/98, 3/7/98)

Response: EPA's Title VI Interim Guidance directs OCR to investigate how the patterns of adverse impact affect different groups based on race, color, or national origin. Therefore, in this investigation, OCR is analyzing the distribution of "burden" between African Americans and non-African Americans. OCR's primary concern in determining the pattern of adverse impact is to address how the impact falls upon different racial or ethnic groups.

8. Comment: In assessing any risks, EPA should keep in mind that "Shintech's emergency response to protect citizens when there is a release is "shelter in p[lace" (with many houses lacking structural integrity), that the narrow one-way, dead-end streets in Convent will inhibit, if not prevent altogether, any evacuation, and that Shintech must rely on a volunteer fire department to respond to any unauthorized releases." (2/18/98)

Response: OCR is examining a new universe of Program 3 facilities under LDEQ's Chemical Accident Prevention Regulations which are subject to the most comprehensive planning for accidental releases requirements because they pose the greatest hazard potential to workers, the public, and the environment. These regulations were designed to prevent accidental releases of chemicals to the air and to minimize consequences of such releases. Although the analyses for this facility universe is not yet complete, OCR will consider the results before concluding its investigation. Moreover, in its assessment of whether there is an adverse disparate impact, OCR will review and take into consideration information including increased potential for accidental releases associated with a concentration of industrial activity.

9. Comment: Complainants object to EPA's "selective choice of documents to consider in its adverse impact review" and question the relevance of the Journal of the Louisiana Medical Society article entitled "Which Parishes Are Most Healthy." (3/12/98)

Response: OCR is considering all of the information received to date in its investigation. OCR has received a number of health and risk related documents submitted by the Complainants, LDEQ, and Shintech, Inc. for inclusion in the record. Many of these documents were submitted to OCR because the submitter believes that they are important for OCR to consider in any finding it may make regarding alleged violations of Title VI and EPA's implementing regulations.

OCR does not have the expertise to evaluate these types of health and risk related studies, reports, and other materials. Therefore, OCR asked a team of experts within EPA to review the documents to comment on the validity and completeness of the studies' technical approach, observations, and conclusions. Moreover, the reviewers were asked, using those and other materials available to them, to describe what would be reasonable to conclude concerning the magnitude, severity, likelihood, and frequency of adverse impacts from facilities receiving environmental permits in Louisiana. OCR had already sent the review team many of the documents the Complainants listed in their March 12, 1998 letter. OCR has forwarded copies of the remaining documents Complainants cited[4], as well as Complainants' comments regarding the Louisiana Medical Society journal article.

10. Comment: TRI releases per resident of St. James and Convent demonstrates a significant pre-existing cumulative toxic burden. The Complainants propose comparing for different geographic areas of the results of several calculations which focus on the pounds of TRI releases per person per year. (3/7/98)

Response: EPA does not consider pounds of TRI releases per person in a county as a useful measure of burden for two major reasons. First, a county-based analysis assumes each person in the Parish has the same potential to be "exposed" to all facilities' emissions regardless of whether

[4] Letters, including attachments, dated December 21 and 23, 1997 from the Tulane Environmental Law Clinic; Attachments 11, 12, 13, and 15 to letter dated December 9, 1997 the Tulane Environmental Law Clinic.

they live near one or any facilities. Second, the level of burden varies inversely (and significantly) with the number of people in the area assumed to be proximate. Therefore, the same size releases occurring in densely populated cities may have less "burden" than those occurring in sparsely populated areas.

For example, suppose there are two areas (e.g. parishes) with facilities whose total releases were 100,000 pounds of chemicals per year. The first area has 100 persons within a radius of 4 miles of its facilities and a total population of 10,000. The second has 10,000 people within 4 miles of its facilities and a total population of 50,000. Using a pounds per person measure, the areas could be compared at either the facility level or at the area level:

	Area 1	Area 2
Near facilities	100 persons = 1,000 lbs/person	10,000 persons = 10 lbs/person
In entire area	10,000 persons = 10 lbs/person	50,000 persons = 2 lbs/person

Depending on the choice of proximate areas, Area 1 would be considered 5 to 100 times as "bad" as Area 2, although the volume of releases was the same. Even though all persons near facilities in both areas would have the potential to be "exposed" to the same amount of the chemicals (since both area's facilities were emitting the same amounts), the area with the most people at this "exposure level" would score the lowest. In fact, the pounds per person measure would be highest *where there are no people at all to be potentially exposed*, since with zero persons in the denominator, the pounds per person measure would be infinite. This is counter to the way a measure of burden should behave – that the measure should increase as either the number of pounds or the number of people increases.

EPA considers its calculations of pounds of toxicity-normalized air emissions per square mile of proximate area to be a better measure, although it cannot be used to compare widely divergent area sizes (e.g., counties and states should not be compared). However, within similar size zones from facilities (e.g., 2-miles or 4-miles), the burden from a number of facilities can be compared for different population subgroups using a ratio of the average "pounds per square mile" for each subgroup. Similar comparisons could be made using average calculated concentrations at ground level with dispersion models.

11. Comment: The toxic pollutants emitted by Shintech contain many carcinogenic and special interest chemicals. In addition, Shintech's hazardous waste incinerator will emit dioxin and furans. These new Convent area exposures to carcinogenic and other "special interest" chemicals released by Shintech would be on top of significant existing exposures to highly toxic chemicals." (3/7/98)

Response: EPA is conducting an analysis that accounts for the toxicity of TRI chemicals emitted, from TRI as well as TEDI facilities, as well as the influence of chemicals emitted by more than one facility on a proximate population. The EPA analysis will be looking at the relative burden of the persons in the proposed facility area. As a result of its review of the proposed Shintech RCRA permit, LDEQ has notified Shintech of technical deficiencies. LDEQ has not started drafting the permit.

12. Comment: EPA should focus on TRI SIC and TEDIs. EPA should not "lump Shintech" with its large air emissions with smaller facilities and other manufacturing operations that may not be similar to in methods, impacts, or permitting status as the proposed Shintech facility in the All TRI facility universe. TEDI reflects LDEQ's "judgment about which facilities present the greatest toxic air pollution risks" and "the TEDI universe, rather than the TRI air categories, more accurately reflects populations facing significant toxic air exposures." (3/7/98)

Response: EPA is evaluating the information developed in its analyses and will consider the substance of the comment.

C. TRI Estimates for Shintech's Air Emissions.

13. Comment: The Complainants believe Shintech's estimated TRI emissions of 145,000 pounds to air are low and "unfounded and inappropriate." (2/18/98, 3/7/98)

Response: EPA's analyses have examined the sources of air pollutants considered "toxic" under the definitions used by the TRI and TEDI reporting requirements. The conventional pollutants mentioned which make up the bulk of the total estimated emissions are not reportable under TRI or TEDI. Also, the proposed Shintech facility's estimated conventional pollutant emissions are not expected to create a situation of non-compliance with the National Ambient Air Quality Standards.

In its updated demographic and burden analyses, EPA examined a wider range of reportable chemical emissions expected from the proposed Shintech facility, including chlorine, ammonia, HCl in its aerosol form, and further breakdown of VOC's into component chemicals, some of which are reportable. These revisions place the total estimated quantity of "toxic" chemical emissions from the proposed facility at about 192,000 pounds, an increase from the previous estimate of 145,000 pounds.

D. The Data and Analysis Should Reflect New and Expanded Industries in the Area.

14. Comment: EPA should consider new and expanded industries and non-TRI releases in the Convent area. (3/7/98)

Response: OCR's analyses examine TEDI releases which include chemicals beyond those listed in TRI. OCR's April "Draft Revised Demographic Information" incorporated the Louisiana Iron Works and American Iron Reduction in its "St. James 1997" analyses. EPA anticipates that the iron reduction facilities will begin reporting to TRI in 1999 when new TRI reporting requirements are in place. However, based on a review of the anticipated VOC emissions from these facilities, it is not anticipated that they will report to TEDI.

E. One-Mile Radius.

15. Comment: The Complainants commented that Shintech's analysis showed a vulnerability zone with a radius of 3.8 miles for a release of anhydrous hydrogen chloride (HCl) and a vulnerability zone of larger than 6 miles for ethylene dichloride, without any evidence that the toxic air emissions will decrease after one mile. Therefore, Complainants believe Shintech's reliance on a one mile radius contradictory. (2/18/98)

Response: OCR agrees that there is evidence of impacts from toxic chemical air emissions (both routine and accidental releases) that occur beyond 1 mile from the release location. Therefore, the analyses presented include three radii, at 1, 2, and 4 miles, which EPA considers as the radii most likely to include the majority of potential proximate area impacts.

F. Draft Demographic Information and Data Analysis.

16. Comment: It is unclear how EPA counted proximate populations when a part of a 1, 2, or 4-mile ring was outside the industrial parishes, the corridor 3-mile zone, or St. James Parish. Also, can you assure us that in calculating your 1, 2 and 4-mile ratios for facilities in St. James that border on another parish, EPA did not count populations in that other parish if the radius crossed a parish boundary? (3/7/98, 4/7/98)

Response: The Title VI complaint alleges that African Americans in St. James Parish are "already overburdened by" LDEQ's permitting of facilities with toxic emissions. EPA examined this geographic reference area in response to the allegation in the complaint.

The proximate population estimates for St. James Parish include only those people who live in St. James Parish and are within the specified distances (*i.e.*, 1, 2, or 4 miles) of facilities. For example, if a facility with its point location in Ascension Parish has a 4-mile ring which takes in a portion of St. James Parish, the 4 mile ring is "clipped" at the border of St. James Parish, so that only those people estimated within the portion of the ring in St. James Parish were included in the St. James Parish population estimate (those people estimated to live within the circle in Ascension Parish are excluded from the estimate). Similarly, if a facility's point location is in St. James Parish and its 4-mile circle extends beyond the borders of the parish, the 4-mile ring is "clipped" at the border and only those people estimated within the portion of the ring in St. James Parish were included in the St. James Parish population estimate. The clipping technique was not used for the Industrial Corridor Parishes or the Industrial Corridor 3-Mile Zone.

17. Comment: The Industrial Corridor 3 Mile Zone is not an appropriate geographic reference area because there is no TRI facility in East Feliciana, West Feliciana, Pointe Coupe, Assumption or Plaquemines parishes. The Complainants believe the "lack of a TRI facility in 5 of the 15 parishes makes for a very poor comparison or geographic reference area since EPA would be including parishes in the reference group that have no relationship to the facilities being examined." (3/7/98)

Response: EPA uses the Industrial Corridor 3 Mile Zone to identify a group of facilities in close proximity to the Mississippi River, as distinct from ones located in the parishes that border the

river. For the January 1998 "Draft Demographic Information," the reference population for the Industrial Corridor 3 Mile Zone analysis was the total population of the parishes of East Baton Rouge, West Baton Rouge, Iberville, Ascension, St. James, St. John the Baptist, St. Charles, Jefferson, Orleans, and St. Bernard. The parish populations for the parishes listed in the above comment were not included in the total used for the January 1998 analyses.

While the land area depicted in the January 1998 "Draft Demographic Information" maps of the Industrial Corridor 3 Mile Zone extended into those 5 additional parishes, only a small portion of those 5 parishes were estimated to be within the proximate populations of nearby facilities inside the Industrial Corridor 3 Mile Zones. At that time, EPA did not believe it was appropriate to include the total populations of those five parishes in the reference area since no TRI or TEDI facilities had a point location within the Industrial Corridor 3 Mile Zone in those parishes and because the proportion of these populations in any proximate facility buffer was small.

In the April 1998 "Draft Revised Demographic Information" analyses, EPA modified its definition of the Industrial Corridor Parishes to mirror the twelve parishes LDEQ uses to define the Mississippi River Industrial Corridor. There is at least one TRI and one TEDI facility in each of the 12 Industrial Corridor parishes. The Industrial Corridor 3 Mile Zone was also modified to examine facilities with point locations within 3 miles from either bank of the Mississippi River in the 12 Industrial Corridor Parishes. There is at least one TRI facility within the 3 Mile Zone in each of the 12 Industrial Corridor parishes. However, only in Orleans Parish is there no TEDI facility within the Industrial Corridor 3 Mile Zone.

18. Comment: A disparate impact in the State, corridor, or St. James, prior to the permitting of Shintech, should not be a defense to the impact Shintech will have on Convent after it is sited. "Just because the DEQ might not be discriminating to any greater degree against the residents of Convent than it already discriminates against other residents of the state, parish, or corridor does not mitigate a finding of disparate impact from the permitting of Shintech." (2/18/98)

Response: If the data suggests there is a disparate impact in St. James Parish, the Industrial Corridor, or the State, this will not be a defense to the alleged violation. Under a disparate impact, standard, the "defenses" available to LDEQ are rebuttal evidence showing there is no disparate impact as alleged or non-discriminatory justifications proffered for the action taken.

19. Comment: EPA needs to clarify where Shintech is included in tables and where it is not. (2/18/98)

Response: The April 1998 "Draft Revised Demographic Information" only includes Shintech in the St. James 1997 analyses. The majority of the April 1998 tables (Tables A1 through A5, B1 through B7, and C1 through C5) represent 1995 TRI and 1996 TEDI reporters, since the proposed Shintech facility is not yet built or operating, it is not included in those analyses. However, Tables A6 and C5 do include the proposed Shintech facility, as do the tables in the Appendices which were retained from the January 1998 "Draft Demographic Information."

20. Comment: Including Shintech in the comparison or reference population in effect compares Shintech's effects against Shintech's effects. This may be particularly problematic in this case because the racial disparity around the Shintech site may significantly boost the representation of African Americans in any comparison or reference population. (2/18/98)

Response: EPA has removed the proposed Shintech facility from the Tables in the April 1998 "Draft Revised Demographic Information" which represent facilities reporting to TRI in 1995 and TEDI in 1996. However, in Attachment 4 "Shintech Estimated Contribution to Demographics" EPA has provided the information necessary to add Shintech into those tables.

21. Comment: The Complainants express concern over the use of point rather than facility boundary polygons and questions the point locations chosen for "some of the St. James Parish facilities." (2/18/98, 3/7/98)

Response: EPA's April 1998 "Draft Revised Demographic Information" includes demographic information derived from polygons. However, EPA does not have polygons for all of the TRI and TEDI facilities in the State. EPA has completed analyses using polygons for the Cumulative Total Population analyses in St. James Parish (Table A5) and the Multiple Facility analyses for some universes in the Industrial Corridor Parishes and the Industrial Corridor 3 Mile Zone, as well as St. James Parish (Tables B3, B5, and B7). The comment did not include a list of the St. James Parish facility point locations that caused concern; therefore, OCR cannot address the comment specifically.

G. Demographic Statistical Analysis Comments

22. Comment: EPA "inexplicably used" the Complainants' proposed "new" p values for the Relative Ratio column in Table A1, but used the incorrect "old" p values (i.e., EPA's "p1" and "p2") for the other tables. (2/18/98)

Response: EPA believes its use of p values are appropriate to use for the analyses it planned. EPA consistently defined and used "p1" and "p2" throughout the Tables to determine how the distribution of African Americans in the proximate population compared with that of non-African Americans. Both populations were analyzed in proportion to their number in the total population for that geographic area (i.e., the reference area). EPA defined the reference populations as either the African American population or Non-African American population for each of the geographic areas it was examining. Each Table represented a different geographic area (i.e., Table A1 contained Statewide estimates; Table A2 contained Industrial Corridor Parishes estimates; Table A3 contained Industrial Corridor 3 Mile Zone estimates; and Table A4 contained St. James Parish estimates). Therefore, each Table would necessarily use a distinct reference population in order to calculate p1 and p2. In other words, EPA's p1 and p2 changed from Table A1 to Table A2 because the geographic area and populations changed.

The explanation for the apparent consistency observed between the Complainant's proposed "p1-new" and "p2-new" and EPA's p1 and p2 at the Statewide geographic area is that the Complainants propose all be compared to the Statewide percentage for African Americans.

23. Comment: The Complainants also believe EPA's use of "p1/p2":

> (1) does not allow the results of one geographic area to be compared to another and it "does not allow the results in the 1, 2, or 4 mile zones to be compared to each other...." (2/18/98);
>
> (2) may only determine "any additional impact in St. James Parish above and beyond a disparate impact . . ."; (2/18/98)
>
> (3) "does not accurately portray minority distribution close to the facility. The . . .closer you get to the plant, the smaller the area and the smaller the population in that area become. As a result of having less people, p1 and p2 go down automatically causing the 'two sided test for homogeneity' . . . which is p1-p2, to go down lower simply because the number of people living in the ever smaller area decreases. This makes the EPA's standard deviation a strong function of the total population in the domain of interest and of the distance to the plant;" (2/18/98)
>
> (4) Complainant's provided an example on page 2 of their February 18, 1998 comments designed to point out an instance where the statistical test for homogeneity and the relative ratio indicated a "perfect score . . .even though the percentage minority population in the test area is 98%." (2/18/98)

Response:

(1) EPA's method for a given geographic area allows different facility universes within that geographic area to be compared with each other, and the results for the universes in the same geographic area are also comparable across proximate area ranges (the 1, 2 and 4 mile radii). The denominators used in the calculation of the p values are the same for all the facility universes within each geographic area.

(2) EPA is unsure how one might measure an "additional disparate impact . . . above and beyond a disparate impact already existing throughout the state." EPA was not attempting to determine "any additional disparate impact;" rather, EPA was examining potential disparities inside three smaller geographic areas in addition to the State as a whole. Moreover, EPA's calculations always condition the probabilities with respect to a given reference geographic area. Hence the concept of finding additional disparity is not meaningful because as EPA changes the reference geographic area, the disparity may go up or down or not exist at all despite what the disparity might be with respect to another reference area (i.e., another geographic area or another set of circumstances).

(3) The test statistic for homogeneity depends on p1-p2 as well as its variance, and so while p1 and p2 may go down as the number of people living in a smaller area decreases, the test statistic may actually increase. For an example of this, see Table A4 (All TRI) materials and compare Number of Standard Deviations for 1 mile and 2 miles. For the 1 mile case, p1 and p2 are both lower than the corresponding values for 2 miles, but the number of standard deviations is higher at 1 mile.

(4) The Complainants provided an extreme example to show an instance in which an apparent disparity existed with a Relative Ratio value of 1. However, a Relative Ratio derived from p1-new/p2-new has the same limitation pointed out for EPA's p1/p2 Relative Ratio. The difference between the two Relative Ratios is the point at which each masks a situation where a large number of the proximate population is African American, but the test ratio is close to 1. The complainants described a case in which this was possible for the ratio of p1/p2. Using the p1-new/p2-new, if the percentage of African Americans and non-African Americans in the proximate population approaches the same value as the state's average, the Relative Ratio will approach 1, which would suggest that no disparity existed. Two examples presented here illustrate instances in which the new ratio could also yield values of 1 even though an apparent disparity exists.

Example 1

Assume that a hypothetical Parish has 308 African Americans and 1692 non-African Americans. All 308 African Americans in the Parish and 692 non-African Americans are in the proximate area. A table of these values would look like:

	African American	Non-African American	Row Total
Proximate	308	692	1000
Not Proximate	0	1000	1000
Column Total	308	1692	2000

In this example, p1-new = 0.308/0.308 = 1 and p2-new = 0.692/0.692 = 1. Hence, the New Relative Ratio p1-new/p2-new = 1/1 = 1, which suggests no significant disparity exists. Yet all of the African Americans in this Parish are within the proximate area. Using EPA's approach in this case, the value of p1 would be 308/308, or 1, and the value of p2 would be 692/1692 =0.409. The Relative Ratio of p1/p2 would be 2.45.

Example 2

In another hypothetical parish, there might be a total population of 450 African Americans and 8650 non-African Americans. In the example, all of the 450 African Americans in the Parish are proximate to facilities in the given facility universe, while 1011 non-African Americans are proximate.

	African American	Non-African American	Row Total
Proximate	450	1011	1461

Not Proximate	0	7639	7639
Column Total	450	8650	9100

The proportion of African Americans in the proximate area is 450/1461=0.308. The p1-new = 0.308/0.308 and p2-new = 0.692/0.692, and the New Relative Ratio is p1-new/p2-new = 1.00. But again, all of the African Americans are proximate despite p1-new/p2-new giving a New Relative Ratio of 1, although the Relative Ratio of p1/p2 is equal to 8.56. These two examples demonstrate that p1-new/p2-new used in isolation may give misleading results.

In EPA's approach, a Relative Ratio result of 1 indicates that within the population of a reference geographic area, an African American person who is picked at random is as likely to be proximate as a non-African American picked at random. This says nothing about how many African Americans and non-African Americans in the Parish are in the proximate population. As the above examples illustrate, the p1-new/p2-new relative ratio may also mask apparent disparities for the total numbers of African Americans in the proximate population when the proportion in the proximate population approaches the state average. EPA recognizes that disparity can not always be adequately measured by only one variable. The Relative Ratio, like other measures, is used as a data display technique to illustrate potential disparity in a more meaningful and understandable way.

24. Comment: EPA must use p values that compare minority distribution in the test area to the norm *in the state*.... because it is a better technique for examining disparate impact. EPA should incorporate an indicator that "captures the full impact of racial disparity, whether caused by within-jurisdictional siting disparity or by inter-jurisdictional discrimination within the State." (3/7/98). The Complainants do not believe EPA's current Relative Ratios for the Industrial Corridor or St. James Parish indicate the racial disparity in those geographic areas as compared to the population in the State. To "capture the full impact of racial disparity . . . within the state" by showing "the joint probability of both being near a facility and being in the jurisdiction, conditioned on race" (3/7/98), the Complainants suggest either of the equivalent methods:

(1) the use of "p1-new/p2-new,"
(2) the use of "p1-joint/p2-joint", or
(3) the multiplication of EPA's Relative Ratios (p1/p2) by 1.31 for the Industrial Corridor Parishes or by 2.21 for St. James Parish.

Response: EPA's Relative Ratios are designed as an indicator of association between race and proximity at various local levels, as well as at the Statewide level. EPA was examining the probability of an African American within a given geographic area to that of a non-African American within the same area of being proximate (i.e., living within 1, 2, or 4 miles) to a particular type of facility (e.g., TRI with reported air emissions greater than 100,000 lbs.).

EPA generally believes that the reference areas used are the most appropriate ones for localized comparisons of this type. The scope of the reference area, which can be considered as the set of

potentially proximate populations, could be expanded, but the assumption that population in the reference area has a reasonable possibility to be in the proximate area of the set of facilities becomes suspect. In addition, geographic areas of the state can vary widely in the composition of populations. For example, in the Industrial Corridor parishes the percentage of African American population ranges from about 5% for St. Charles Parish to over 60% in Orleans Parish, with 8 parishes below and 4 above the weighted average of 36.8% for the 12 parishes.

Based on the allegations in the complaint that African Americans were being subjected to discriminatory effects as a result of LDEQ's permitting program, EPA began the investigation examining African Americans compared to non-African Americans. Without an explanation of why the Complainants are altering their allegation or requesting this change to include all minorities (a group broader than African Americans) as compared to non-minorities, at this late date and point in the investigation it is impracticable for EPA to restructure its analysis. Moreover, the number of non-African American minorities (e.g., Asian Pacific Islander, Native American) in Louisiana are relatively small compared to African Americans and the change will likely have no impact on the relative ratios and other indicators of disparity in the analyses.

In addition, none of the three methods proposed by the Complainants result in Relative Ratios that can be translated into probabilistic statements, such as those included in either the January 30, 1998 or April, 1998 materials. The meaning and weight to be given the Complainants proposed New Relative Ratios is unclear.

However, EPA understands that its Relative Ratio calculations for the two Industrial Corridor geographic areas and St. James Parish were not designed to incorporate an indicator that accounts for the higher proportion of African Americans within the Industrial Corridor Parishes (38.6%) and St. James Parish (49.6%) as compared to the State (30.8%). EPA believes it is important when considering the results of the various demographic analyses as a whole to recognize these circumstances. EPA has used the Statewide average of African Americans (30.8%) as the benchmark for the Facility Distribution analyses in Tables D11 - D40 for the two Industrial Corridor geographic areas and St. James. EPA believes use of the Statewide average in these analyses is more appropriate as it allows EPA to account for African American populations in these areas that are higher than the Statewide average without creating a Relative Ratio that cannot be translated into a meaningful probabilistic statement.

25. Comment: EPA should explain why, when looking at the EPA data on St James Parish TRI facilities, EPA lists Air Products & Chemicals Inc. as being located in St. James Parish, although assigning the facility a parish population number and percent African American for Ascension Parish (20,879 and 22.8%). (4/7/98)

Response: The point location for Air Products is in St. James Parish. EPA assigned the facility parish population numbers as listed (20,879 and 22.8%); however, these are St. James Parish numbers as asserted.

26. Comment: EPA should not provide a ratio where p2=0 and where p1=0 and p2=0 the ratio should either be 1.0 or NA. (3/7/98)

Response: In both the January 1998 and April 1998 tables, p1 and p2 were calculated to 15 decimal places but only expressed to one decimal place, thus there are instances in the Multiple Facility analyses where the spreadsheet indicates that p1 = 0.0% and/or p2 = 0.0% even though there are both African Americans and non-African Americans estimated in proximity. The calculation of the relative ratio; however, uses the full numerical accuracy of p1 and p2. So, the Relative Ratio reflects the difference in the proportions, while the p1 or p2 column may indicate 0.0%. We will updated the Tables where this has occurred using the following rule for expressing the relative ratio: If p1=p2=0 the ratio was expressed as a '-'; if p2=0 the ratio was expressed as 'infinity'; otherwise the ratio was expressed as a number.

27. Comment: The "ribbon graphs may present biased presentations since there are five categories to the left of p1/p2 = 1.0 and nine to the right. Presenting the graphs in this way may make it appear that there are more TRI sites in areas where there are fewer African Americans than the state average when, in fact, that is not the case." (3/7/98)

Response: The value of 1.0 used in these charts indicated an instance in which the percentage of African Americans in the proximate population of a particular facility was the same as the overall state average; p1 and p2 were not used in the calculations for the ribbon charts. However, EPA understands the concern regarding the 5 and 9 data classes in its January 1998 “Draft Demographic Information” and has revised these charts in the April 1998 “Draft Revised Demographic Information” to be more like a standard histogram, with two classes above and two classes below the state average 1.0 ratio, along with a separate class for zero percentage sites.

28. Comment: Complainants are uncertain how EPA derived its standard deviations and why the method selected was chosen over other available statistical methods. (3/7/98)

Response: EPA used traditional tests for testing a difference between proportions. The results displayed in the standard deviation column of the tables are from the test for homogeneity. (Kendall, et al. 1978) (copy attached). EPA also performed Fischer’s Exact test for association between race and proximity; however, since those results were consistent with the test for homogeneity, the results were not displayed.

H. EPA Should Provide the Complainants With a Complete List of All Data and Other Information that EPA Will Rely on in Making Its Disparate Impact Finding.

29. Comment: EPA should provide Complainants with a complete list of all data and other information that EPA will rely on in making its disparate impact finding. (2/18/98, 3/7/98, 3/12/98)

Response: In its April 1998 “Draft Revised Demographic Information,” OCR stated that it “will review and take into consideration information including:

- the demographic characteristics of proximate populations (*i.e.*, the populations living in proximity to or within exposure pathways of facilities of concern);

- the characteristics of facility activities (*e.g.*, amounts and relative toxicity of emissions; potential for releases resulting from spills or accidents);

- the presence of additive or cumulative pollution loadings; and

- increased potential for accidental releases associated with a concentration of industrial activity.

EPA is currently reviewing materials submitted by the Complainants, LDEQ, and Shintech. . . ." (April 1998 Draft Revised Demographic Information, page 3.)

I. Miscellaneous.

30. Comment: EPA must not overlook the "overwhelming evidence of bias by the DEQ." (3/7/98)

Response: The bias allegation along with the public participation allegation will be addressed in any finding EPA makes.

J. Additional information and reports submitted in comments.

EPA has incorporated the supplemental information, documents, and reports submitted by Complainants with its letters dated February 18, March 7 and 12, 1998 into the administrative record and is currently reviewing it.

II. Response to Comments from Tulane Environmental Law Clinic on April 1998 "Revised Draft Demographic Information."

1. Comment: Table A5 does not contain all of the facility universes as the previous tables.

Response: EPA is currently producing a Table containing the missing TEDI polygon analysis for St. James Parish analysis.

2. Comment: Table A7 (St. James '97) only contains All TEDI and All TRI, where are the missing universes?

Response: Although EPA has confirmed that the two iron reduction facilities (one of which is currently operating and the other has not yet been built) are likely to report to TRI starting in 1999, EPA does not have reported emissions data for new facilities. EPA cannot ascertain at this point which pounds of air emissions category (e.g., greater than 20,000, greater than 100,000) in which to place the iron reduction facilities; therefore EPA only examined All TRI and All TEDI. There is no A7 table.

3. Comment: Table A6 has some computational errors: 2 miles All TEDI and All TRI should have ratios greater than 1.0, as should All TEDI at 1 mile.

Response: EPA will correct those computational mistakes and provide updated tables as soon as possible.

4. Comment: Since the Title VI complaint involves Shintech "it seems highly unusual, if not arbitrary, for EPA to drop Shintech from the demographic analysis yet suddenly to include non-St. James Parish facilities in the St. James Parish tables."

Response: During the February meetings in Louisiana the issue of excluding Shintech from the April analyses was discussed. EPA has done so for several reasons. First, the complaint is about Shintech adding to an "already overburdened St. James Parish." To determine if St. James Parish is overburdened as the complaint alleges, EPA must examine St. James Parish without Shintech. In addition, at the meeting in February, the Complainants expressed concern about analyses and discussions which describe the circumstances as if the proposed Shintech facility had been built. Moreover, Complainants' comments submitted on February 18, 1998, requested "EPA prepare charts that do not include Shintech's racial contribution" because they believe that including the proposed Shintech facility in the analyses is "particularly problematic." (See Comment 20 above).

As discussed earlier, the inclusion of facilities outside of the Parish was in response to the allegations in the complaint that African Americans in St. James Parish are "already overburdened by" LDEQ's permitting of facilities with toxic emissions. People living within the borders of St. James Parish are also within the proximate areas (i.e., 1, 2, and 4 miles) of facilities located in neighboring parishes. The clipping technique was also used in the January 1998 "Draft

Demographic Information;" however, in reading through the explanation provide on page 8 and Figure 5 of that document, EPA understands the source of confusion and provided a more detailed explanation of the clipping technique in the April 1998 "Draft Revised Demographic Information."