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Prepared for the

Massachusetts Department of
Environmental Quality Engineering

AMBIENT AIR MONITORING IN BILLERICA, MASSACHUSETTS

FINAL REPORT

June 1986

PROJECT NO. 3-001-101

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1.0 INTRODUCTION

MDS Advanced Analytics, Inc. was contracted by the Massachusetts Department of Environmental Quality Engineering (DEQE) to provide TAGA® services in and around the Billerica, Massachusetts area. Monitoring in this area was performed on May 29, 30, 1986 and June 5, 1986. Five sites were identified as being of interest. The four sites were: General Latex, Penn Culvert, Boston & Maine Railroad Tank Wash Holding Pond, and Shaffer Landfill.

All sites were visited at least twice during the monitoring period to perform qualitative as well as quantitative analyses when warranted.

Analyses were performed by James J. Zoldak, Project Manager, Bruce E. Dumdei, Ph.D., Senior Scientist and Donald V. Kenny, Project Scientist. Mr. Thomas McGrath was the DEQE Project Manager.

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2.0 INSTRUMENTATION

All analyses were performed using a TAGA® 6000 triple stage quadrupole mass spectrometer, which has been mounted in a 32-foot self-propelled van. This allowed for onsite analysis either in the stationary or mobile mode. The van was equipped with external air sampling ports as well as internal sample preparation facilities to accommodate all analytical requirements. A diagram of the van can be found in Figure 2-1.

The TAGA® 6000 is a triple stage quadrupole mass spectrometer which can be operated either as a conventional mass spectrometer to produce simple mass spectra or as a triple stage quadrupole to produce collisionally activated dissociation (CAD) spectra. A schematic of the instrument is shown in Figure 2-2. The former operating mode provides the masses of molecular or parent ions present in samples while the latter provides positive identification of compounds.

CAD analysis is based on initial ionization of the compound to produce a parent ion followed by collisionally activated dissociation of this ion to produce fragments or daughter ions. The ionization takes place in the source. The TAGA® can be fitted with either an Atmospheric Pressure Chemical Ionization (APCI) source or a Low Pressure Chemical Ionization (LPCI) source. The sources differ in their operating pressures and method of ionization.

In APCI, the ionization process is initiated by electrons created in a corona discharge. The high energy electrons then remove electrons from N_2 to form N_2^+. This ionization begins a sequence of reactions which eventually results in a population of reagent ions with the formula $(H_2O)_n\ H_3O^+$. The reagent ions then protonate trace molecules that are present to form parent ions.

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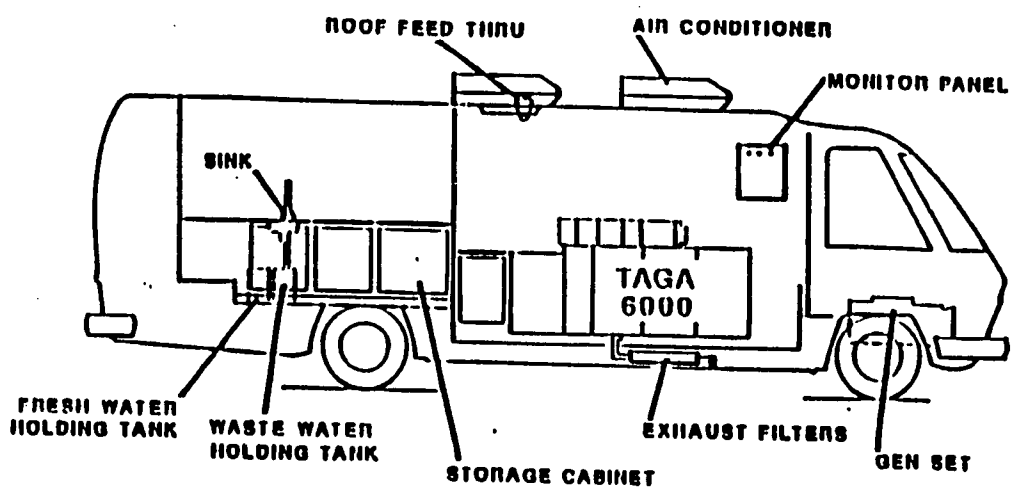

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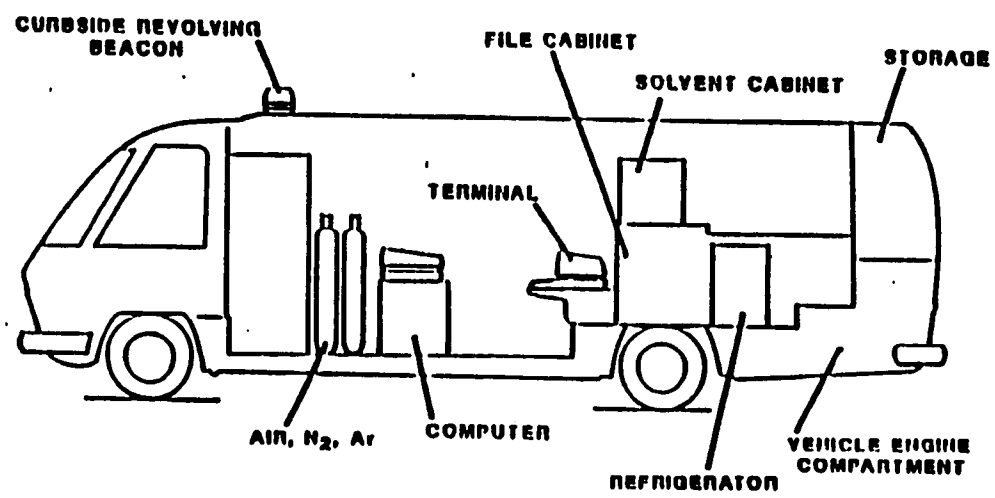

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Figure 2-1. Diagram Of Van Layout

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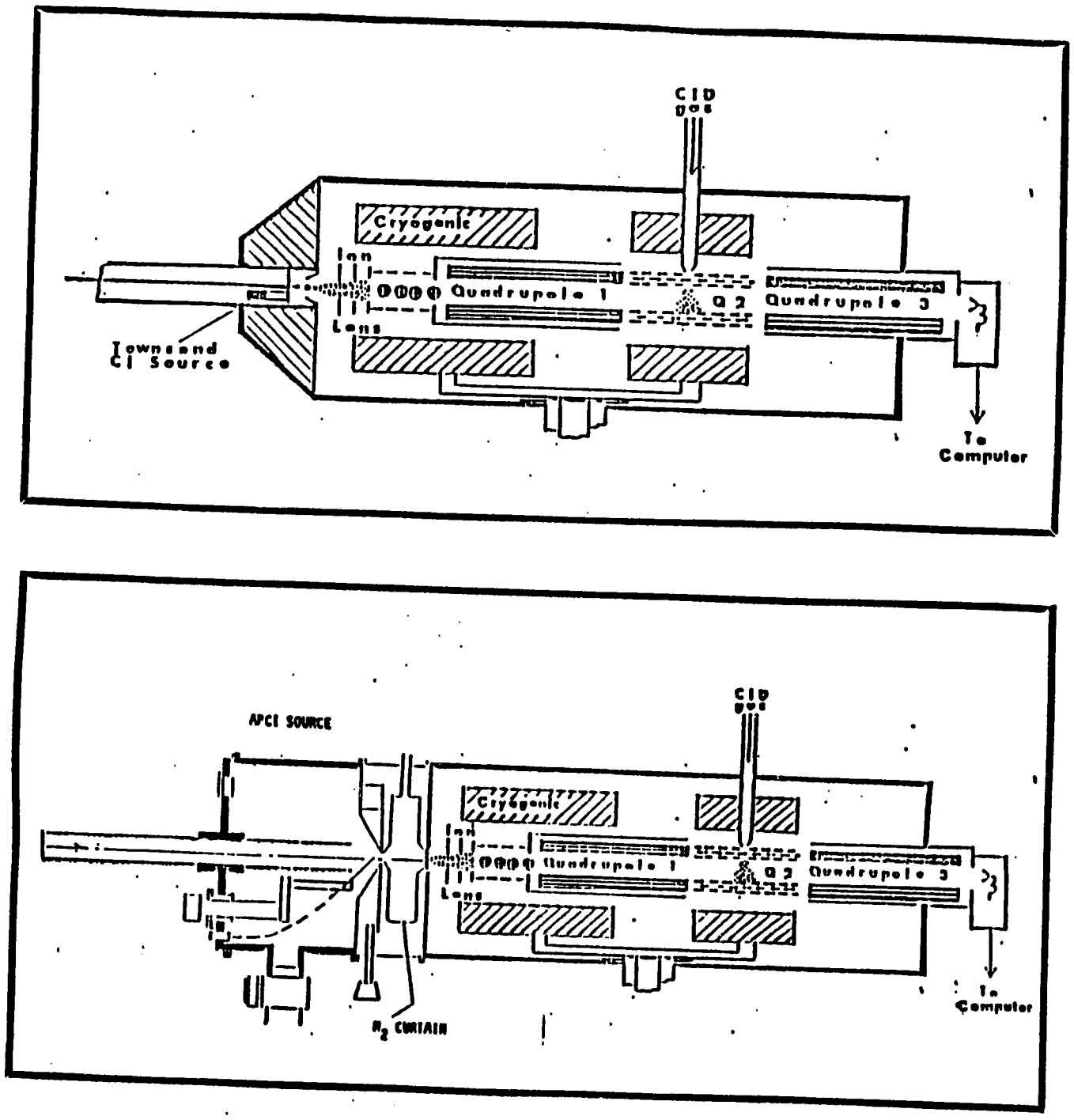

Figure 2-2. Diagrams Of LPCI Source (Top) And APCI Source (Bottom)

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The initial ionization within the LPCI source is the result of emission of electrons from a Townsend discharge. The reagent ions formed are N_2^+, O_2^+, NO^+ and $H_3O^+(H_2O)_n$. The resulting ionization of trace components is then the result of charge exchange by N_2^+, protonation by the $H_3O^+(H_2O)_n$ or NO^+ cluster formation.

The mass fragmentation and identification region consists of three sets of quadrupole rods. The first and third set of rods (Q1 and Q3) are identical and can be operated either as high pass filters by placing only RF potential on them or can be used for mass separation by placing RF and DC potentials on them. The middle set of rods (Q2) can act only as a high pass filter and serves as a collision chamber. To obtain a daughter ion spectrum, the first set of rods is set to transmit only the parent ion into Q2. A stream of neutral argon (Ar) atoms is directed perpendicularly through Q2 colliding with the parent ions which then fragment to form daughter ions. The third quadrupole (Q3) is then scanned over the entire mass range to produce a daughter ion spectrum. Once the daughter ions have been determined, Q3 is set only to transmit these ions to the detection device or multiplier. Quantitation is then accomplished by comparing the ion intensities for the daughter ions obtained from the samples to the intensities obtained for known concentrations of standards.

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3.0 PROCEDURE

Direct air sampling was employed throughout this study. Direct-air sampling for the Low Pressure Chemical Ionization (LPCI) source allowed outside air to be drawn through a port on either the side or in the roof of the van at an approximate flow rate of 2 liters per second. This flow rate, due to the high velocity, minimized "memory effects" of the tubing. The sample then passed over a glass splitter where a representative sample entered the transfer line leading to the LPCI source. The flow through the sampling line was drawn through the air motor and exhausted outside of the van (Figure 3-1).

Direct air sampling for the Atmospheric Pressure Chemical Ionization (APCI) source allowed outside air to be drawn through a port on either the side or in the roof of the van at an approximate flow rate of 2 liters per second as for the LPCI source. Again this flow rate, due to the high velocity, minimized "memory effects" of the tubing. However, with the APCI source, the entire sample passed into the ion source where the sample was ionized by a corona discharge. The ionized species were accelerated by a voltage potential difference through a nitrogen curtain which separates the vacuum from atmospheric pressure while the non-ionized sample was drawn through the air motor and exhausted outside the van (Figure 3-2).

Samples were analyzed first in the RF only mode which allowed only molecular or parent ions to be monitored. The data from the baseline sample (RF only mode scan obtained at an upwind site for direct-air sampling) was qualitatively and quantitatively subtracted from that of each sample indicating only those components unique to the sample or present at higher concentrations than that found in the baseline sample.

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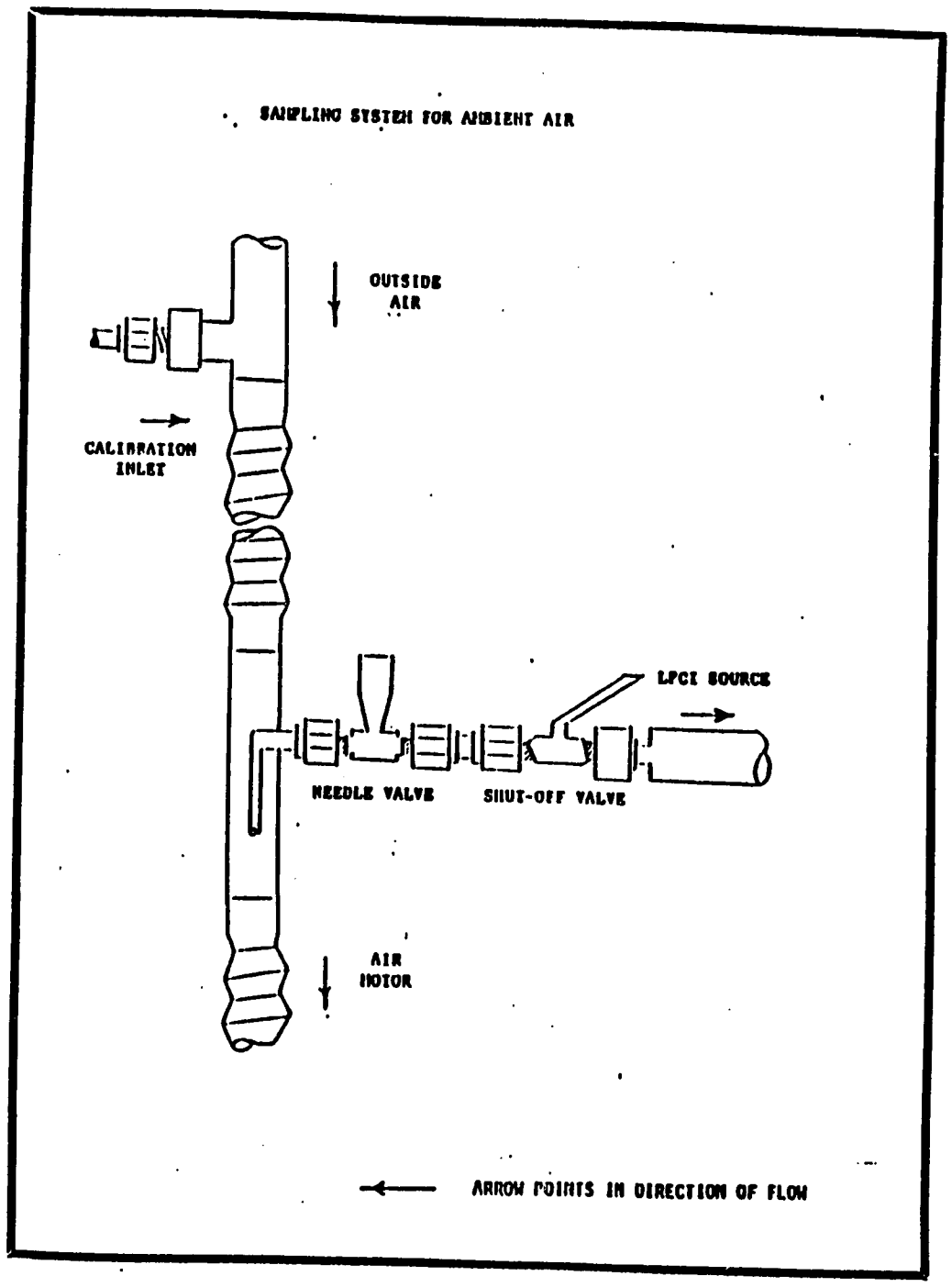

Figure 3-1. LPCI Sample Inlet

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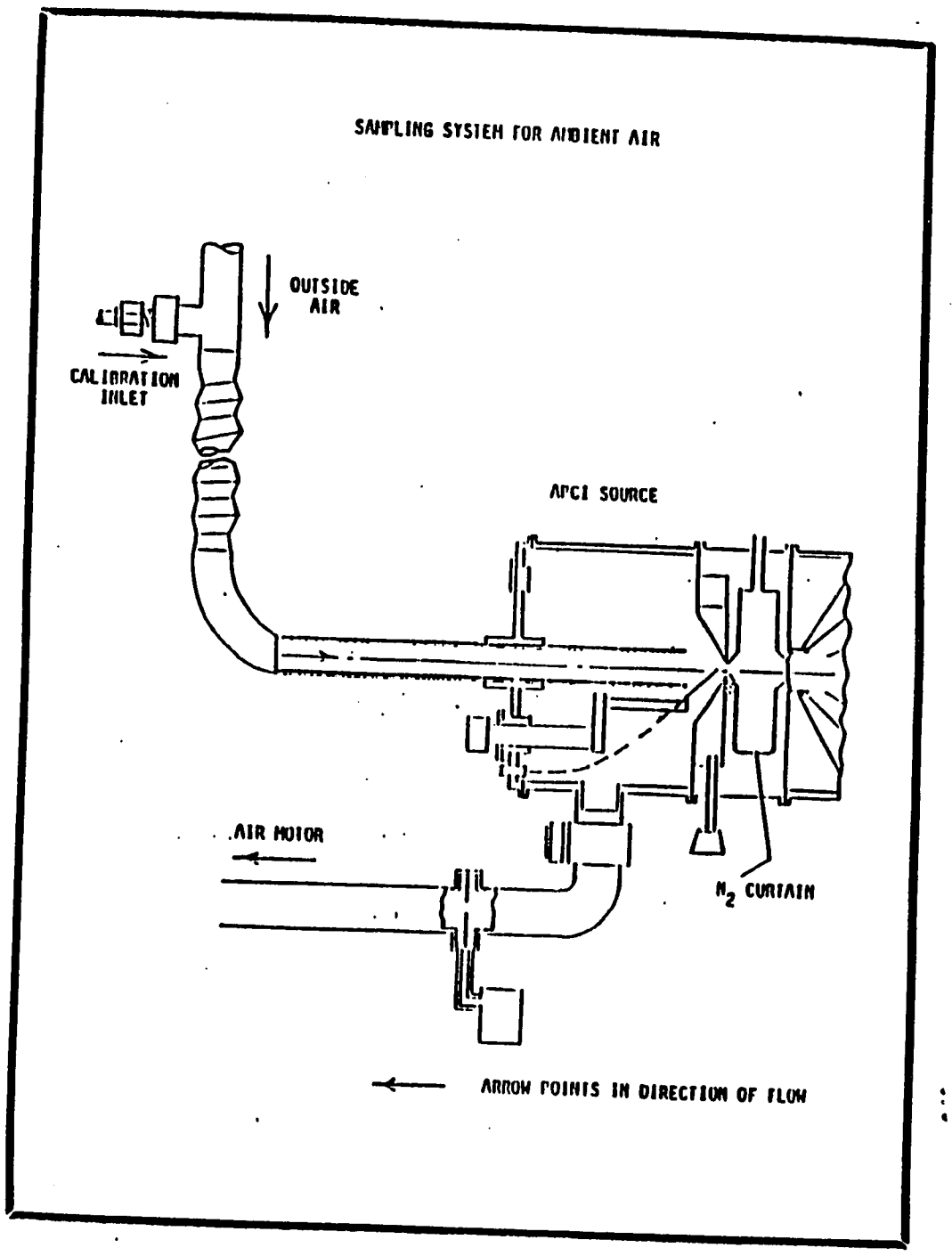

Figure 3-2. APCI Sample Inlet

The results of these tests were then run through a computer program to identify significant peaks that were greater than three times the levels found in the background sample. This indicated the ions of interest to be monitored in full MS/MS analysis.

Once the ions of interest were determined, the samples were reanalyzed using the full MS/MS capabilities to generate fragmentation or daughter ion scans for each of these ions. This characteristic fragmentation pattern or mass spectrum was then computer searched against the library of spectra on the computer. The computer search, as well as technical review, were used to characterize the samples.

A time-weighted average (TWA) for compounds identified by the daughter ion scans was conducted. This signal intensity, averaged over the sampling period, was then compared to a standard of that compound to determine concentration. Quantitation was performed by monitoring two daughter ions for each compound. Two daughter ions were monitored to add confidence to the identification of each compound and to provide quantitative information even in the case of one ion being masked by an interferent.

Landfill vent gas samples to be analyzed were collected in Tedlar bags and analyzed as quickly as possible to minimize losses due to adsorption. The samples were collected using the bag-in-drum method with the sampling apparatus shown in Figure 3-3.

Briefly, the bag was placed in the rigid container with the bag inlet connected to the outside air through a port in the wall of the container. The container was then evacuated through a second port to the outside. This caused the bag to inflate with outside air. Once the bag was full, it was sealed and was ready for analysis. The sample bag was connected directly to the TAGA® for analysis through the LPCI sample inlet.

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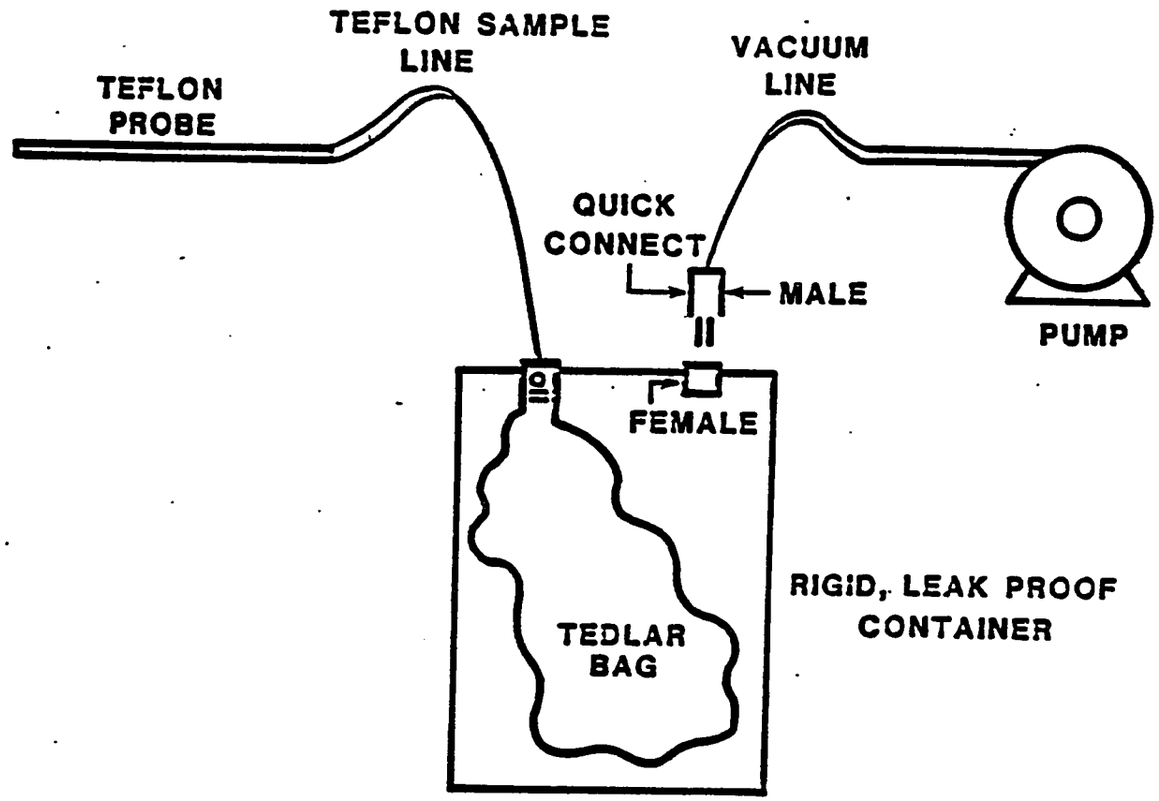

Figure 3-3. Bag-In-Drum Method

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4.0 QUALITY CONTROL PROGRAM

The following is a summary of the multi-step Quality Control Program implemented by MDS Advanced Analytics.

4.1 Mass Calibration

To assure that the assignment of the mass-to-charge ratio (m/z) is correct, the instrument is set up to scan within a 4 amu range of a nominal mass value for a compound. The compounds for mass calibration are acetone (m/z 59) and nitrobenzene (m/z 124). It is very important that the ions produced in the source be measured with sufficient accuracy to give the correct mass assignment in each scanning quadrupole. The criteria requires an absolute accuracy of $\pm$0.2 amu.

Once the mass-to-charge ratios are considered to be at their nominal value in each scanning quadrupole, the computer stores this information for use during acquisition. This calibration is performed every morning.

4.2 Compound Calibration

The stability of the instrument is checked daily by a compound calibration check. This check is performed prior to any quantitative analysis and in addition to any formal compound calibration done for target compounds.

Calibration of the TAGA® response versus concentration of organic compounds is done using injections of vapors at a known rate into the ambient air flow using a syringe drive apparatus. The syringe drive apparatus holds a glass syringe coated with the compound being calibrated. After vapor equilibrium is established, the syringe drive introduces the vapors into the air stream at a known rate.

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The concentrations are calculated by the computer utilizing the following formula:

$$C\ (ppb) = \frac{P_s \times I \times 10^9}{P_a \times F}$$

where: C = Concentration in ppb of the trace component in the air stream

P_s = Saturation vapor pressure of the compound at the syringe temperature (Torr)

P_a = Atmospheric pressure (760 Torr)

I = Injection rate (ml/sec)

F = Air stream flow rate (ml/sec)

A graph of the instrument response versus concentration constitutes the calibration curve of the compound.

In the event that a standard is not available for a compound identified, a similar compound from the same chemical class is used and the concentration for that compound is estimated.

4.3 Instrument Sensitivity Check

As part of both the mass and compound calibration checks, a sensitivity check is also conducted. This requires a comparison of ion counts for compounds observed during mass calibration and those values from historical data. Deviations less than 15-20% in these values indicates no change in the operating status of the instrument. Deviations greater than 20% requires recalibration of the system.

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4.4 Technical Review

All data is subjected to a qualitative identification via the computer library search as well as review and evaluation by an experienced mass spectroscopist.

4.5 Detection Limits

The detection limits are defined as three standard deviations of the signal obtained while monitoring in zero air or at a point upwind where target compounds are not expected to be present. This level of signal corresponds to the response required to raise the signal significantly above electronic noise. The three standard deviations rule is used to give an indication as to the lowest level of signal that can be quantitated with a less than significant contribution from electronic noise. The detection limit value stated, therefore, is not the lowest detectable signal but should be interpreted as the lowest level that can be quantitated accurately.

The detection limit value for each compound may not be the same from project to project or location to location due to the varying complexity of the matrices involved. Even while monitoring in a given matrix the background noise levels may vary due to the dynamic nature of that specific matrix (e.g., wind variation, traffic variation). Therefore, at times during the monitoring background noise levels may decrease enough to permit a mass spectrum to be obtained which is interpretable above the background noise levels. In this case the most significant ions may be present at approximately the correct ratios but a significant contribution from background noise can still be observed. This would allow for a qualitative identification only and not

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permit accurate quantitation of signal. The degree to which the background noise may vary, due to vapor pressure, ionization potential, and electronic interferences, is not determinable so an absolute lowest detectable level for a compound cannot be given.

4.6 Analytical Limitations

When using the TAGA® MS or MS/MS systems, there are certain limitations which cannot be overcome. There are four basic types of limitations.

First, it should be noted that the ionization voltage of the LPCI source has a limited functioning range. It is possible that certain compounds, although present in the sample, may not be detected due to the ionization potentials of these compounds exceeding the working range of the LPCI source.

Secondly, the instrument cannot distinguish structural isomers from one another. For example the TAGA® even in the MS/MS mode cannot distinguish between xylene and ethyl benzene due to their similar fragmentation patterns. In this case, both compounds are reported and a response factor for one of the compounds is used for quantitation purposes.

Thirdly, certain chlorinated compounds which are not structural isomers cannot be distinguished. The reason for this is that the soft ionization that occurs in the source itself is strong enough for some chlorinated compounds to lose a chlorine atom forming the parent $(M-Cl)^+$ ion (M minus Cl).

An example of this phenomenon exists between the compounds vinylidene chloride and methyl chloroform. Vinylidene chloride has molecular weight of 96 and the parent ion formed is the $(MH)^+$ ion at m/z 97. Methyl chloroform has

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a molecular weight of 132, but the parent ion formed is not the $(MH)^+$ but the $(M\text{-}Cl)^+$ ion thus the parent ion formed is (132-35) or m/z 97.

Ions Observed	Compound	Molecular Weight (AMU)
97 (MH^+)	Vinylidene Chloride	96
97 $(M\text{-}Cl)^+$	Methyl Chloroform	132

After methyl chloroform loses Cl, the ionized species is identical to the charged vinylidene chloride ion $(CH_2\text{-}CCl_2)^+$. The fragmentation pattern is identical and thus indistinguishable by mass spectroscopy without special reagent gas mixtures and parameters settings.

There is also the possibility of interferences from the TAGA® drive engine/generator exhaust. Although the system is designed to sample upwind of exhausts and minimize interferences, there are times when still wind conditions, fluctuating wind direction and mobile monitoring situations may contribute certain interferences at varying levels. This interference does not in any way affect samples analyzed by bag-in-drum or heated purge methods.

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5.0 DAILY SCHEDULE OF PERFORMANCE

DAY #1, MAY 29, 1986

APCI Source, Qualitative Screening

- Mass calibration of system to assure proper assignment of mass-to-charge (m/z) ratios.
- TAGA® sensitivity check in sample matrix.
- Technical difficulty experienced with system, monitoring began at 12:00 p.m.
- Qualitative characterization at Howe High School used as upwind background.
- Qualitative characterization of General Latex facility at Ironhorse Park.
- Qualitative characterization downwind of Penn Culvert facility at Ironhorse Park.
- Qualitative characterization of headspace of Boston & Maine (B&M) tank wash holding pond (sample taken through respirator tubing).
- Qualitative characterization directly downwind of B&M tank wash holding pond.
- Qualitative characterization downwind of B&M tank wash holding pond on Moosewood Avenue.

DAY #2, MAY 30, 1986

LPCI Source, Qualitative Screening

- Mass calibration of system to assure proper assignment of mass to charge (m/z) ratios.
- TAGA® sensitivity check in sample matrix.
- Compound calibration for acetone, benzene, toluene and heptane.
- Detection limit generation for calibrated compounds at Howe High School.
- Background qualitative characterization at Howe High School
  - Ambient air sampled directly, and
  - Through respirator tubing

- Qualitative characterization downwind of General Latex at Ironhorse Park.
- Qualitative characterization downwind of Boston & Maine Railroad (B&M) at Ironhorse Park Helipad.
- Qualitative characterization of headspace of B&M tank wash holding pond.
- Qualitative characterization directly downwind of B&M tank wash holding pond.
- Qualitative characterization downwind of B&M tank wash holding pond on Moosewood Avenue.
- Qualitative characterization downwind of Shaffer Landfill on Gray St.
  - Temporary loss of vacuum; site was revisited on 6/5/86.
- Qualitative characterization of Shaffer Landfill Tedlar bag sample.

DAY #3, JUNE 5, 1986

<u>LPCI Source, Qualitative Screening</u>

- Monitoring time divided between Wilmington and Billerica sites.
- Mass calibration of system to assure proper assignment of mass to charge ratios (m/z).
- TAGA® sensitivity check in sample matrix.
- Qualitative characterization downwind of Penn Culvert.
- Qualitative characterization at Hajjar School.
- Qualitative characterization downwind of Shaffer Landfill on Gray St.

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6.0 RESULTS AND CONCLUSIONS

The following sections contain the results of the monitoring conducted in and around Iron Horse Park in Billerica, MA. The results presented are qualitative only because:

- The large number of sites of concern in the area along with the limited schedule (2 days) for collecting all APCI and LPCI data did not permit much time to be spent at each location. A full schedule of locations and air bag samples had been agreed upon prior to project initiation.

- The qualitative results did not indicate the presence of any components at concentrations in excess of that observed in the upwind baseline. Had compounds been observed in excess of baseline levels, planned qualitative monitoring would have been postponed or cancelled in favor of a more thorough characterizations at the point of detection.

The qualitative data along with estimated detection limits give an indication of the overall ambient levels for the area.

Figure 6-1 shows the locations where stationary monitoring was conducted in the Iron Horse Park area. A brief screening was conducted at the Helipad area near B&M when a slight odor was detected in the area. The screen did not identify any components in the intermittent plume.

6.1 APCI Results

Qualitative screening was conducted at five sites in the Billerica area. Table 6-1 summarizes the findings of the qualitative screens at four of the five locations. One additional location - onsite downwind of the B&M tank wash holding pond - showed no parent ions above the upwind background so full MS/MS screening was not conducted.

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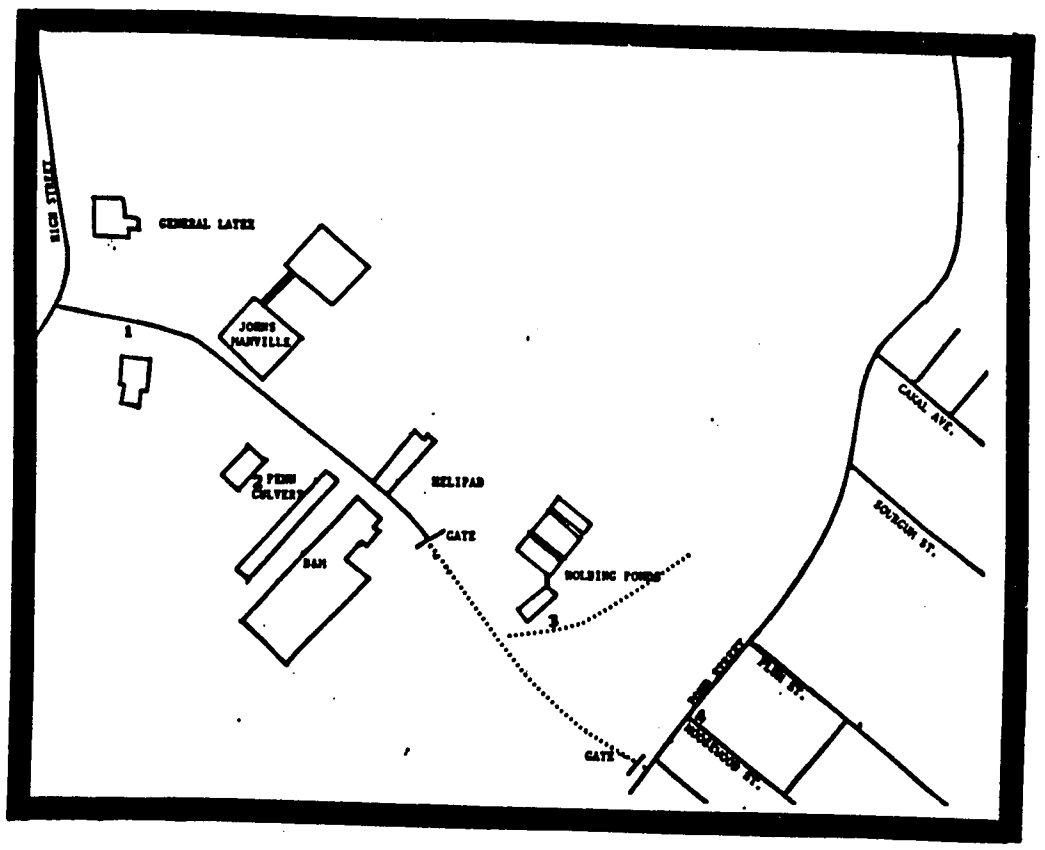

1 = DOWNWIND OF GENERAL LATEX

2 = DOWNWIND OF PENN CULVERT

3 = TANK WASH HOLDING POND

4 = DOWNWIND OF HOLDING PONDS

FIGURE 6-1

MAP SHOWING STATIONARY MONITORING LOCATIONS
IN THE IRON HORSE PARK AREA

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Madeleine Crow

The Commonwealth of Massachusetts

Executive Office of Environmental Affairs

Department of Environmental Quality Engineering

John 7

Division of Air Quality Control

One Winter Street, Boston 02108

JSSELL SYLVA
Commissioner

M O R A N D U M

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D.E.Q.E. Northeast Region

Thomas F. McLoughlin, Pat King

OUGH: Bruce K. Maillet BKM

M: Sarah J. Simon SJS

: June 10, 1986

: Billerica TAGA Van/DEQE Concerns

I spoke to a Billerica citizen today for at least half an hour. Davenport was very upset that the TAGA van was improperly used in erica. She felt the TAGA was to be stationed in Billerica for two eks, which is (what Senator Kennedy (and possibly Markey) had ised and which would be necessary for any kind of reasonable study rding to Mass Fair Share and their Lowell/Silresim experience). s woman is active in the local Concerned Citizens Group (as you may know) and will be in New York this week for treatment of her n tumor.

I discussed several issues with her: 1) The TAGA van is a first in an air toxics evaluation, 2) DAQC is seeking budget money for Department's own mobile monitoring van with similar but different less expensive capabilities, which may be a more appropriate way characterize her area.

The preliminary indications are that few, airborne organic ounds were found in Billerica and no emergency public health at effects.

Mrs. Davenport complained of odors and health symptoms prevalent he evening. TAGA may not be the appropriate way to detect panies who are "midnight emitting".

The report of the TAGA findings will be available to her and her p when it is ready in a couple of months. Doddie Hunnewell is the imary DEQE contact for the citizens concerned about the Billerica rfund site.

I believe Mrs. Davenport spoke at length with Tom McGrath of our r Quality Surveillance Branch last week and convinced him that extra

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time be devoted to Billerica, which it was. I am curious whether we had any directives from our legislators that are as specific as what this woman was promised. This kind of situation makes it imperative that we keep in close touch with environmentally concerned legislators, and I hope we will get a chance to brief them on the TAGA effort soon. On other news, I hope to have a draft TAGA RFP and some proposed spec's for the DEQE mobile van by early July.

DAQC will also meet with appropriate people in the Hazardous Waste group to reinterate our basic approach to air toxics and discuss useful coordination and education points between our two programs.

cc: Don Steele
Jim Neely
Madeline Snow

JJ:dep

TABLE 6-1

APCI RESULTS OF QUALITATIVE ANALYSIS
AT BILLERICA, MA - MAY 29, 1986

Parent Ion (m/z)	Det.# Limit (ppb)	Target Compounds	Background at Howe High School	General Latex	Penn Culvert	Moosewood Road
33	25	Methanol	-	-	-	-
45	50	Acetaldehyde	ND	ND	ND	ND
46	5	C_2 Amine	ND	ND	ND	ND
47	25	Ethanol	ND	ND	ND	ND
59	20	Acetone	✓	✓	✓	✓
60	5	C_3 Amine	ND	ND	ND	ND
61	20	Acetic Acid/C_3 Alcohol	ND	ND	ND	✓
73	10	Methyl Ethyl Ketone	✓	ND	✓	ND
74	5	Dimethyl Formamide	ND	ND	ND	ND
	5	C_4 Amine	ND	ND	ND	ND
75	20	C_4 Alcohol	ND	ND	ND	ND
	20	Methyl Acetate	ND	ND	ND	ND
	20	C_3 Acid	ND	ND	ND	ND
87	10	C_5 Ketone	ND	ND	ND	ND
88	5	Dimethyl Acetamide	ND	ND	ND	ND
	5	C_5 Amine	ND	ND	ND	ND
89	20	Ethyl Acetate	ND	ND	ND	ND
	20	C_4 acid	ND	ND	ND	ND
	20	Dioxane	✓	ND	✓	✓
94	5	Aniline	ND	ND	ND	ND

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TABLE 6-1

APCI RESULTS OF QUALITATIVE ANALYSIS
AT BILLERICA, MA - MAY 29, 1986

Parent Ion (m/z)	Det.# Limit (ppb)	Target Compounds	Background at Howe High School	General Latex	Penn Culvert	Moosewood Road
95	20	Phenol	ND	ND	ND	ND
101	10	Methyl Isobutyl Ketone	ND	ND	ND	ND
102	5	C_6 Amine	ND	ND	ND	ND
108	20/5	Cresol/Methyl Aniline	ND	ND	ND	ND
115	10	C_7 Ketone	ND	ND	ND	ND
116	5	C_7 Amine	ND	ND	ND	ND
	5	C_6 Amide	ND	ND	ND	ND
117	15	C_4 Acetate	ND	ND	ND	ND
119	15	C_4 Cellosolve	ND	ND	ND	ND
129	15	C_8 Ketone	ND	ND	ND	ND
130	5	C_8 Amine	ND	ND	ND	ND
131	15	C_5 Acetate	ND	ND	ND	ND
	15	C_8 Alcohol	ND	ND	ND	ND
170	10	Diphenyl Amine	ND	ND	ND	ND

ND = Not Detected
✓ = Positive Identification
– = Not Analyzed
= Estimated from historical data

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The headspace above the holding pond was sampled directly through 100 feet of tubing. Because of the APCI source's high sensitivity to certain compounds, a fairly high background from tubing artifacts was observed during analysis. Qualitative analysis of upwind ambient air through the tubing permitted a qualitative distinction between artifacts and components of the headspace. The results of this comparison are given in Table 6-2.

No volatile compounds were observed at significantly high levels above background at any of the sites monitored. The only location where compounds were observed were at low levels in the headspace above the tank wash holding pond. The materials were identified as relatively common organic solvents.

6.2 LPCI Results

The results utilizing the LPCI source over 1-1/2 days of monitoring at Billerica includes both ambient air and bag sample analyses. The bag sample was collected at a vent at the Shaffer Landfill in Billerica.

Tables 6-3 and 6-4 summarize the results of the qualitative screens with the LPCI source. The qualitative scans gave indications of low levels of C_5-C_7 hydrocarbons present in the ambient air. Two locations - Penn Culvert and the Hajjar School parking lots - gave some indication of low levels (<5 ppm) of toluene possibly resulting from auto exhaust.

The only sample showing potentially high levels of hydrocarbons was the sample collected at the Shaffer Landfill (Table 6-5). This sample, run undiluted, had hydrocarbons present through C_{12}. Substituted aromatics from

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TABLE 6-2

APCI RESULTS OF QUALITATIVE ANALYSIS OF HEADSPACE
ABOVE B&M HOLDING POND AT BILLERICA, MA
CORRECTED FOR SAMPLING ARTIFACTS

Parent Ion m/z	Det.// Limit (ppb)	Target Compounds	
59	20	Acetone	✓
61	20	Acetic Acid/C_3 Alcohol	✓
73	10	Methyl Ethyl Ketone	✓
87	10	C_5 Ketone	✓
89	20	Dioxane	✓
101	10	Methyl Isobutyl Ketone	✓
119	15	Butyl Cellosolve	Trace

✓ = Positive Identification
// = Estimated from historical data

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TABLE 6-3

LPCI RESULTS OF QUALITATIVE ANALYSIS AT BILLERICA, MA
MAY 30, 1986

Parent Ion	Det.# Limit (ppb)	Target Compounds	Background at Howe High School	General Latex	Headspace of Tank Wash	Moosewood Road
54	30	Acrylonitrile	-	-	-	-
59	20	Acetone	✓	✓	✓	✓
62	-	Vinyl Chloride	ND	ND	ND	ND
64	-/20	Vinyl Chloride/Dichloroethane	ND	ND	ND	ND
71	20	C_5 Alkane	✓	✓	✓	✓
73	10	Methyl Ethyl Ketone	✓	✓	✓	✓
75	30	Butanol	ND	ND	ND	ND
	30	Methyl Acetate	ND	ND	ND	ND
78	10	Benzene	ND	ND	ND	ND
83	40	Chloroform/Methylene Chloride	ND	ND	ND	ND
	20	C_6 Alkene	✓	ND	✓	✓
85	40	Chloroform/Methylene Chloride	ND	ND	ND	ND
	20	C_6 Alkane	✓	✓	✓	✓
87	30	Methyl Acrylate	ND	ND	ND	ND
	30	C_5 Ketone	ND	ND	ND	ND
89	30	Ethyl Acetate	ND	ND	ND	ND
92	10	Toluene	ND	ND	ND	ND
94	100	Phenol	-	-	-	-
97	40	$C_2H_2Cl_2$ Isomers*	-	ND	ND	ND

(continued)

*Represents Dichloroethane, Methyl Chloroform, Vinylidene Chloride and 1,1,2-Trichloroethane.

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TABLE 6-3 (continued)

LPCI RESULTS OF QUALITATIVE ANALYSIS AT BILLERICA, MA
MAY 30, 1986

Parent Ion	Det. Limit (ppb)	Target Compounds	Background at Howe High School	General Latex	Head-space of Tank Wash	Moose-wood Road
	20	C_7 Alkene	-	ND	✓	ND
99	40	$C_2H_2Cl_2$ Isomers*	ND	ND	ND	ND
	20	C_7 Alkane	✓	✓	✓	✓
101	20	Methyl Isobutyl Ketone	✓	✓	✓	✓
	30	Ethyl Acrylate	ND	ND	ND	ND
	30	Methyl Methacrylate	ND	ND	ND	ND
103	30	C_3 Acetate	ND	ND	ND	ND
105	10	Styrene	ND	ND	ND	ND
106	10	Xylene/Ethyl Benzene	ND	ND	ND	ND
107	10	Benzaldehyde	-	-	-	-
108	50	Cresol	-	-	-	-
111	20	C_8 Alkene	ND	ND	ND	ND
112	10	Chlorobenzene	ND	ND	ND	ND
113	20	C_8 Alkane	ND	✓	✓	✓
114	10	Chlorobenzene	ND	ND	ND	ND
115	30	C_3 Acrylate	ND	ND	ND	ND
	30	C_7 Ketone	ND	ND	ND	ND
117	40	Carbon Tetrachloride	ND	ND	ND	ND
	30	Butyl Acetate	ND	ND	ND	ND

(continued)

*Represents Dichloroethane, Methyl Chloroform, Vinylidene Chloride and 1,1,2-Trichloroethane.

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TABLE 6-3 (continued)

LPCI RESULTS OF QUALITATIVE ANALYSIS AT BILLERICA, MA
MAY 30, 1986

Parent Ion	Det.# Limit (ppb)	Target Compounds	Background at Howe High School	General Latex	Head-space of Tank Wash	Moose-wood Road
119	40	Carbon Tetrachloride	ND	ND	ND	ND
	30	Butyl Cellosolve	ND	ND	ND	ND
120	20	C_3 Benzene	ND	ND	ND	ND
125	20	C_9 Alkene	ND	ND	✓	ND
127	20	C_9 Alkane	ND	ND	✓	ND
131	30	Trichloroethylene	ND	ND	ND	ND
	20	C_5 Acetate	ND	ND	ND	ND
133	30	Trichloroethylene	ND	ND	ND	ND
134	20	C_4 Benzene	ND	ND	ND	ND
137	20	Terpenes	-	-	-	-
139	30	C_{10} Alkene	ND	ND	ND	ND
141	30	C_{10} Alkane	ND	ND	ND	ND
146	25	Dichlorobenzene	ND	ND	ND	ND
148	25	Dichlorobenzene	ND	ND	ND	ND
153	30	C_{11} Alkene	ND	ND	ND	ND
155	30	C_{11} Alkane	ND	ND	ND	ND
164	50	Perchloroethylene	ND	ND	ND	ND
166	50	Perchloroethylene	ND	ND	ND	ND
169	30	C_{12} Alkane	ND	ND	ND	ND

✓ = Qualitatively Identified
ND = Not Detected
\- = Not Analyzed
\# = Estimated from historical data

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TABLE 6-4

LPCI RESULTS OF QUALITATIVE ANALYSIS AT BILLERICA, MA
JUNE 5, 1986

Parent Ion	Det.# Limit (ppb)	Target Compounds	Penn Culvert	Hajjar School	Gray Street
54	30	Acrylonitrile	-	-	-
59	20	Acetone	✓	✓	✓
62	-	Vinyl Chloride	-	-	ND
64	-/20	Vinyl Chloride/Dichloroethane	-	-	ND
71	20	C_5 Alkane	-	-	✓
73	10	Methyl Ethyl Ketone	✓	✓	✓
75	30	Butanol	ND	ND	ND
	30	Methyl Acetate	ND	ND	ND
78	10	Benzene	ND	ND	ND
83	40	Chloroform/Methylene Chloride	ND	ND	ND
	20	C_6 Alkene	✓	✓	✓
85	40	Chloroform/Methylene Chloride	ND	ND	ND
	20	C_6 Alkane	✓	✓	✓
87	30	Methyl Acrylate	-	-	ND
	30	Pentanone	-	-	ND
89	30	Ethyl Acetate	ND	ND	ND
92	10	Toluene	✓	✓	ND
94	100	Phenol	-	-	-
97	40	$C_2H_2Cl_2$ Isomers*	ND	ND	ND

(continued)

*Represents Dichloroethane, Methyl Chloroform, Vinylidene Chloride and 1,1,2-Trichloroethane.

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TABLE 6-4 (continued)

LPCI RESULTS OF QUALITATIVE ANALYSIS AT BILLERICA, MA
JUNE 5, 1986

Parent Ion	Det.# Limit (ppb)	Target Compounds	Penn Culvert	Hajjar School	Gray Street
	20	C_7 Alkene	ND	ND	ND
99	40	$C_2H_2Cl_2$ Isomers*	ND	-	ND
	20	C_7 Alkane	✓	-	✓
101	20	Methyl Isobutyl Ketone	ND	ND	ND
	30	Ethyl Acrylate	ND	ND	ND
	30	Methyl Methacrylate	ND	ND	ND
103	30	C_3 Acetate	ND	ND	ND
105	10	Styrene	ND	ND	ND
106	10	Xylene/Ethyl Benzene	ND	ND	ND
107	10	Benzaldehyde	-	-	-
108	50	Cresol	-	-	-
111	20	C_8 Alkene	-	-	ND
112	10	Chlorobenzene	ND	ND	ND
113	20	C_8 Alkane		-	ND
114	10	Chlorobenzene	ND	ND	ND
115	30	C_3 Acrylate	-	-	-
	30	C_7 Ketone	-	-	-
117	40	Carbon Tetrachloride	ND	ND	ND
	30	Butyl Acetate	ND	ND	ND

(continued)

*Represents Dichloroethane, Methyl Chloroform, Vinylidene Chloride and 1,1,2-Trichloroethane.

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TABLE 6-4 (continued)

LPCI RESULTS OF QUALITATIVE ANALYSIS AT BILLERICA, MA
JUNE 5, 1986

Parent Ion	Det.# Limit (ppb)	Target Compounds	Penn Culvert	Hajjar School	Gray Street
119	40	Carbon Tetrachloride	ND	ND	ND
	30	Butyl Cellosolve	ND	ND	ND
120	20	C_3 Benzene	ND	ND	ND
125	20	C_9 Alkene	-	-	ND
127	20	C_9 Alkane	-	-	ND
131	30	Trichloroethylene	ND	ND	ND
	20	C_5 Acetate	ND	ND	ND
133	30	Trichloroethylene	ND	ND	ND
134	20	C_4 Benzene	ND	ND	ND
137	20	Terpenes	ND	-	-
139	30	C_{10} Alkene	-	-	-
141	30	C_{10} Alkane	-	-	-
146	25	Dichlorobenzene	ND	ND	ND
148	25	Dichlorobenzene	ND	ND	ND
153	30	C_{11} Alkene	-	-	-
155	30	C_{11} Alkane	-	-	-
164	50	Perchloroethylene	ND	ND	ND
166	50	Perchloroethylene	ND	ND	ND
169	30	C_{12} Alkane	-	-	-

✓ = Qualitatively Identified
ND = Not Detected
\- = Not Analyzed
\# = Estimated from historical data

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TABLE 6-5

QUALITATIVE RESULTS OF ANALYSIS OF VENT SAMPLE FROM SHAFFER LANDFILL

Parent Ion	Det. Limit (ppb)	Target Compounds	Shaffer Landfill
54	30	Acrylonitrile	-
59	20	Acetone	✓
62	-	Vinyl Chloride	ND
64	-/20	Vinyl Chloride/Dichloroethane	ND
71	20	C_5 Alkane	✓
73	10	Methyl Ethyl Ketone	✓
75	30	Butanol	ND
	30	Methyl Acetate	ND
78	10	Benzene	ND
83	40	Chloroform/Methylene Chloride	ND
	20	C_6 Alkene	✓
85	40	Chloroform/Methylene Chloride	ND
	20	C_6 Alkane	✓
87	30	Methyl Acrylate	ND
	30	Pentanone	ND
89	30	Ethyl Acetate	ND
92	10	Toluene	✓
94	100	Phenol	-
97	40	$C_2H_2Cl_2$ Isomers*	ND

(continued)

*Represents Dichloroethane, Methyl Chloroform, Vinylidene Chloride and 1,1,2-Trichloroethane.

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TABLE 6-5 (continued)

QUALITATIVE RESULTS OF ANALYSIS OF VENT SAMPLE FROM SHAFFER LANDFILL

Parent Ion	Det.# Limit (ppb)	Target Compounds	Shaffer Landfill
	20	C_7 Alkene	✓
99	40	$C_2H_2Cl_2$ Isomers*	ND
	20	C_7 Alkane	✓
101	20	Methyl Isobutyl Ketone	✓
	30	Ethyl Acrylate	ND
	30	Methyl Methacrylate	ND
103	30	C_3 Acetate	ND
105	10	Styrene	ND
106	10	Xylene/Ethyl Benzene	✓
107	10	Benzaldehyde	ND
108	50	Cresol	-
111	20	C_8 Alkene	✓
112	10	Chlorobenzene	✓
113	20	C_8 Alkane	✓
114	10	Chlorobenzene	✓
115	30	C_3 Acrylate	ND
	30	C_7 Ketone	ND
117	40	Carbon Tetrachloride	ND
	30	Butyl Acetate	ND

(continued)

*Represents Dichloroethane, Methyl Chloroform, Vinylidene Chloride and 1,1,2-Trichloroethane.

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TABLE 6-5 (continued)

QUALITATIVE RESULTS OF ANALYSIS OF VENT SAMPLE FROM SHAFFER LANDFILL

Parent Ion	Det.# Limit (ppb)	Target Compounds	Shaffer Landfill
119	40	Carbon Tetrachloride	ND
	30	Butyl Cellosolve	ND
120	20	C_3 Benzene	✓
125	20	C_9 Alkene	✓
127	20	C_9 Alkane	✓
131	30	Trichloroethylene	ND
	20	C_5 Acetate	ND
133	30	Trichloroethylene	ND
134	20	C_4 Benzene	✓
137	20	Terpenes	-
139	30	C_{10} Alkene	✓
141	30	C_{10} Alkane	✓
146	25	Dichlorobenzene	ND
148	25	Dichlorobenzene	ND
153	30	C_{11} Alkene	✓
155	30	C_{11} Alkane	✓
164	50	Perchloroethylene	ND
166	50	Perchloroethylene	ND
169	30	C_{12} Alkane	✓

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ND = Not Detected
- = Not Analyzed
= Estimated from historical data

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toluene through C_4 benzene were also observed. Oxygenated compounds such as MEK, MIBK, and acetone were observed at levels several orders of magnitude higher than in the background.

The confirming spectra for all identifications can be found in the data appendix.

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APPENDIX A

STATIONARY MONITORING CONFIRMING DAUGHTER SPECTRA

APCI

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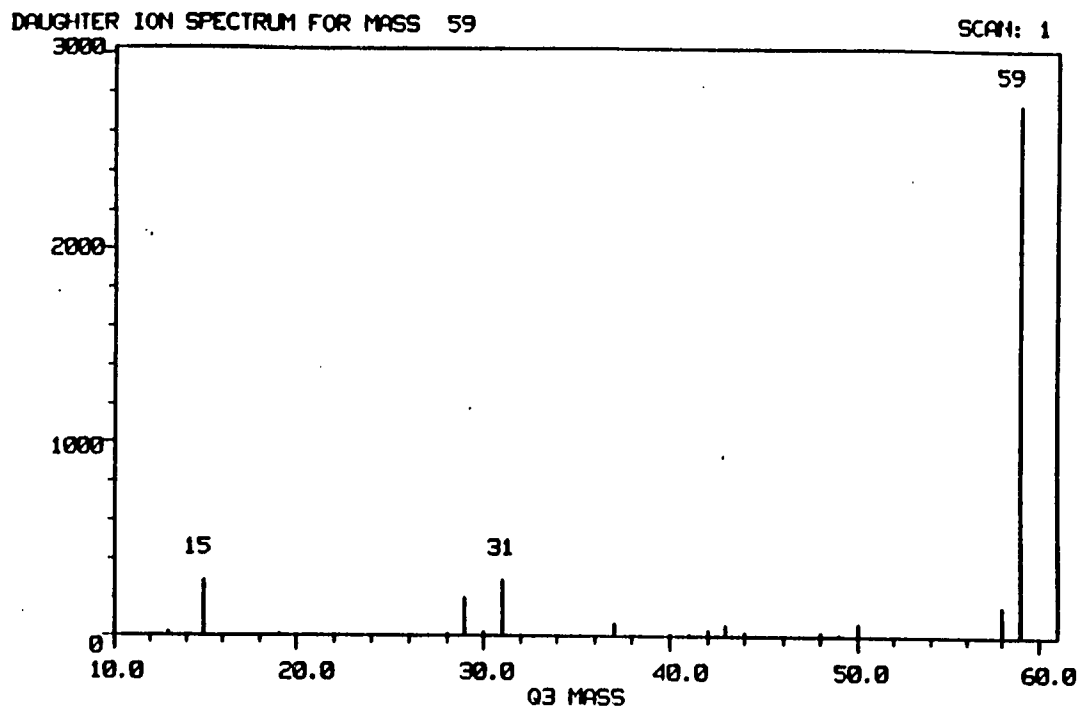

BACKGROUND AT HOWE HIGH SCHOOL (W=SW <5MPH) 5/29/86

LIBRARY SEARCH RESULTS

LIBRARY FILE: TAGA6000

NAME	FORMULA	INDEX	M.W.	RESULT
PROPYLENE OXIDE	C3H6O	53	58	0.7352
ACETONE	C3.H6.O	87	58	0.7276
PROPIONALDEHYDE	C3.H6.O	193	58	0.6984
ACETONE	C3.H6.O	189	58	0.6470
ACETONE	C3.H6.O	300	58	0.6367
PROPIONALDEHYDE	C3.H6.O	309	58	0.6055
PROPIONALDEHYDE	C3.H6.O	91	58	0.5774

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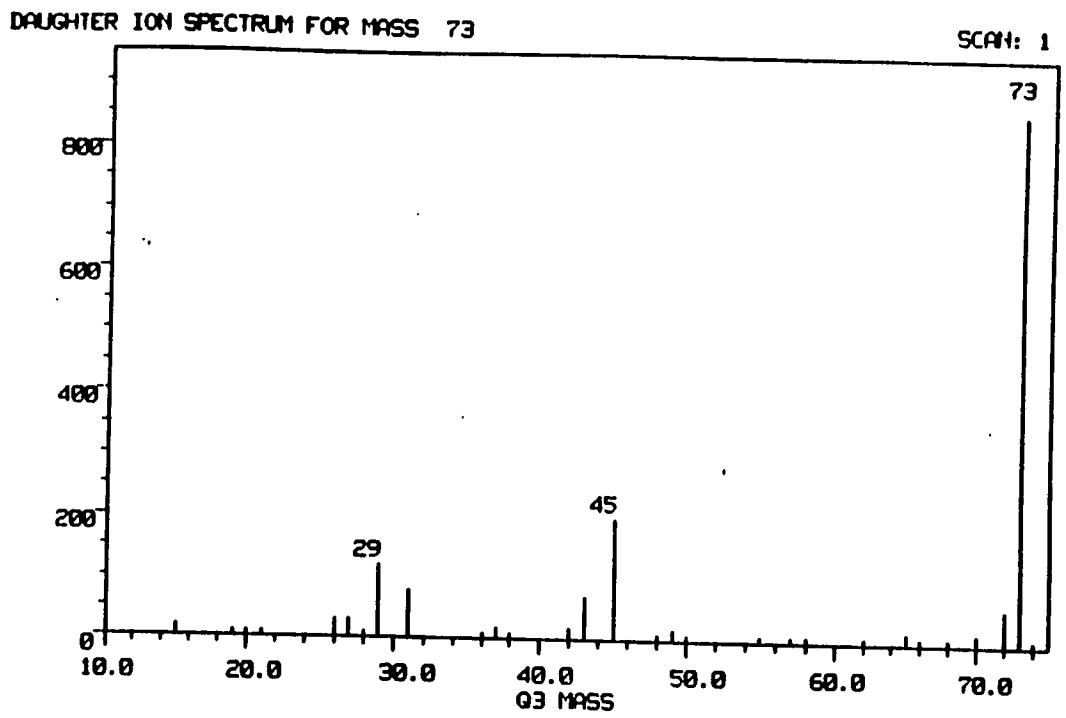
DAUGHTER ION SPECTRUM FOR MASS 73



BACKGROUND AT HOWE HIGH SCHOOL (W=SW <5MPH) 5/29/86

LIBRARY SEARCH RESULTS

LIBRARY FILE: TAGA6000

NAME	FORMULA	INDEX	M.W.	RESULT
BUTRALDEHYDE	C4.H8.O	308	72	0.6563
CIS EPOXYBUTANE	C4.H8.O	355	72	0.6264
METHYL ETHYL KETONE	C4.H8.O	356	72	0.6059
BUTYRALDEHYDE	C4.H8.O	86	72	0.5774
BUTYRALDEHYDE	C4.H8.O	188	72	0.5721

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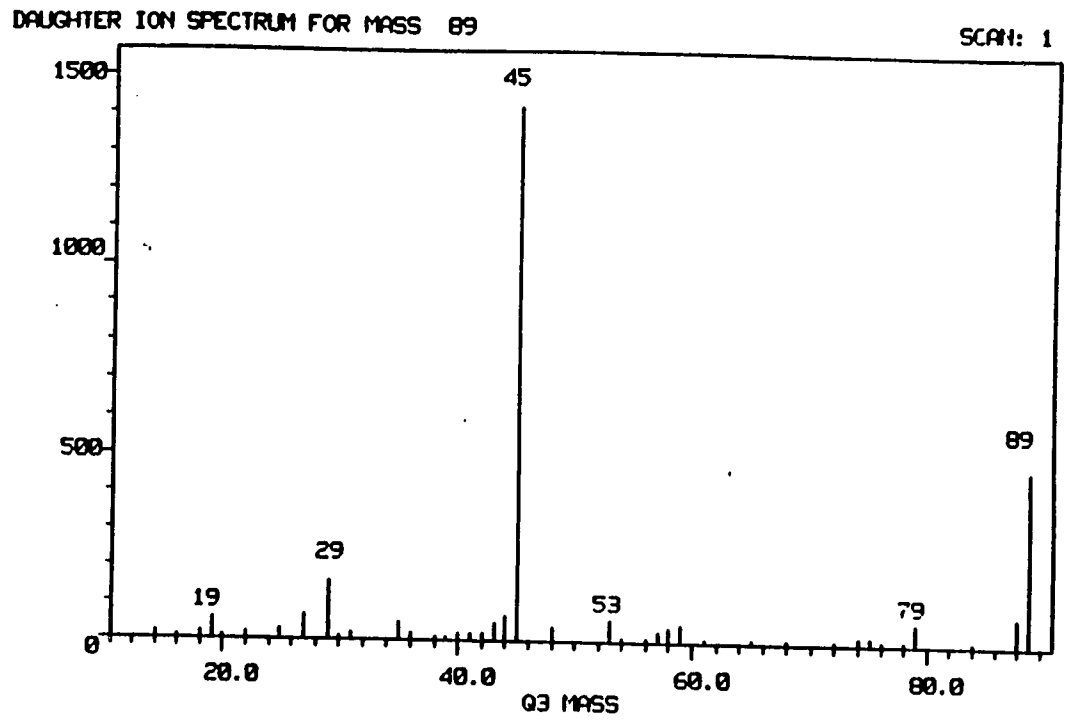

BACKGROUND AT HOWE HIGH SCHOOL (W-SW (5MPH) 5/29/86

LIBRARY SEARCH RESULTS

LIBRARY FILE: TAGA6000

NAME	FORMULA	INDEX	M.W.	RESULT
1,4-DIOXANE	C4.H8.O2	306	88	0.9129
DIOXANE	C4.H8.O2	88	88	0.9045
DIOXANE	C4.H8.O2	190	88	0.7559
LACTIC ACID	C3H6O3	233	90	0.7255
LACTIC ACID	C3H6O3	148	90	0.7071
3-METHYL-1-BUTANOL	C5H12O	118	88	0.5774
3-METHYL-1-BUTANOL	C5H12O	220	88	0.5071
4-HYDROXY-2-BUTANONE	C4H8O2	124	88	0.4714

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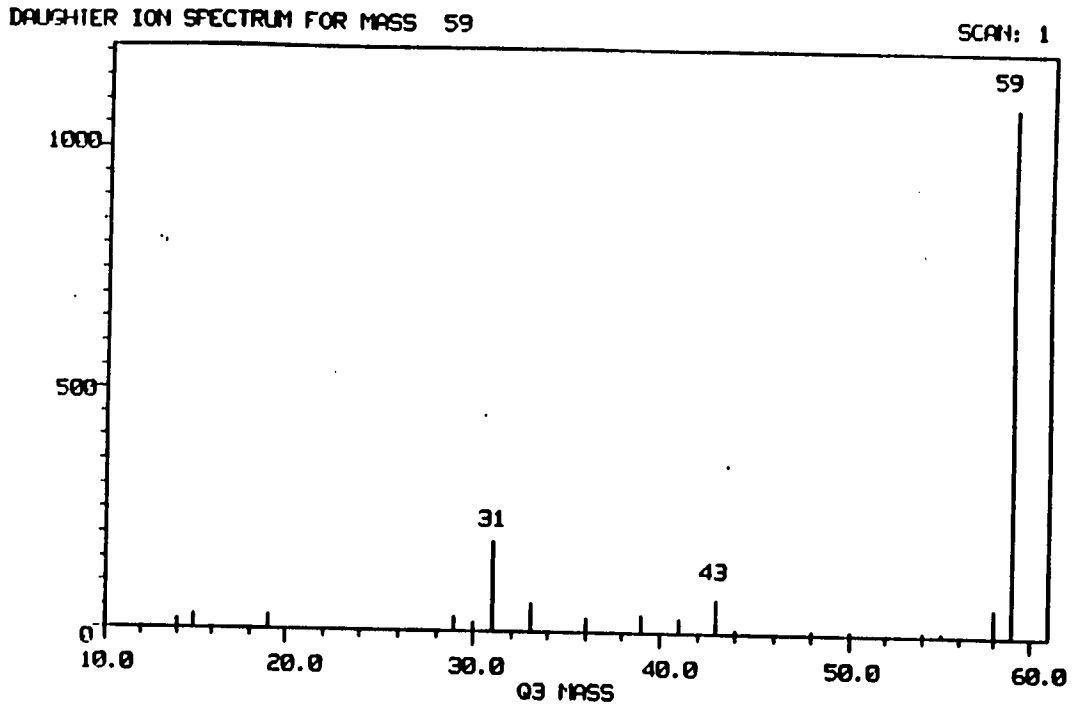

HEADSPACE THROUGH TUBING OVER B & M HOLDING POND 5/29/86

LIBRARY SEARCH RESULTS

LIBRARY FILE: TAGA6000

NAME	FORMULA	INDEX	M.W.	RESULT
ACETONE	C3.H6.O	300	58	0.7884
PROPIONALDEHYDE	C3.H6.O	193	58	0.7651
PROPIONALDEHYDE	C3.H6.O	309	58	0.7528
PROPYLENE OXIDE	C3H6O	53	58	0.7352
ACETONE	C3.H6.O	87	58	0.7276
ACETONE	C3.H6.O	189	58	0.6470
PROPIONALDEHYDE	C3.H6.O	91	58	0.5774

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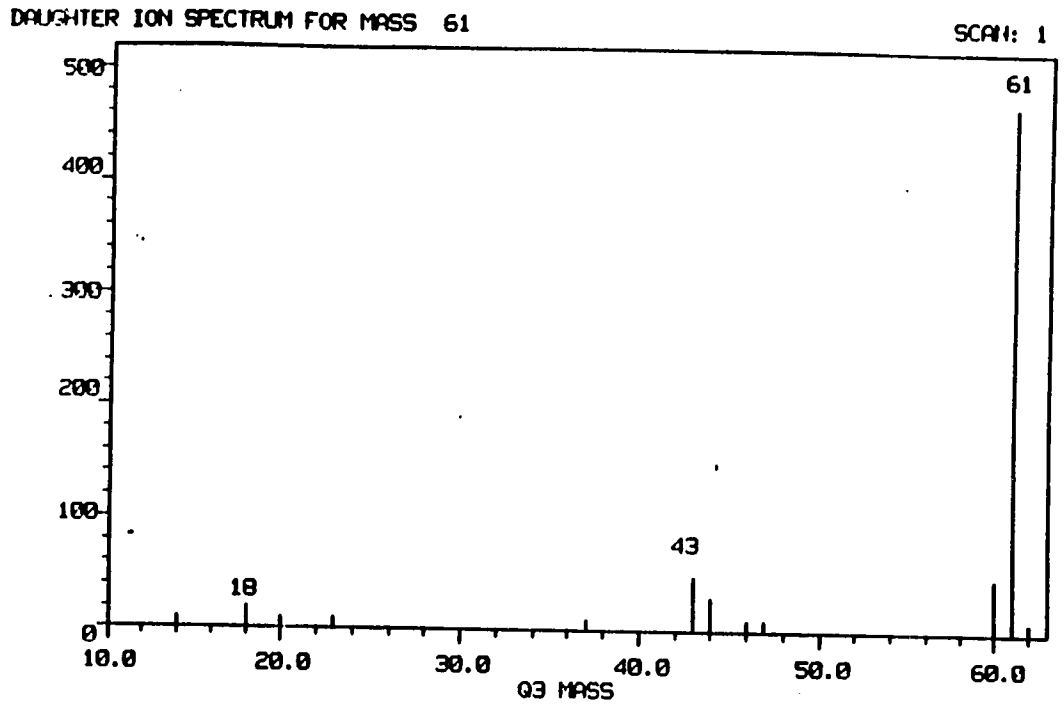

HEADSPACE THROUGH TUBING OVER B & M HOLDING POND 5/29/86

LIBRARY SEARCH RESULTS

LIBRARY FILE: TAGA6000

NAME	FORMULA	INDEX	M.W.	RESULT
ACETIC ACID	C2.H4.O2	92	60	0.9428
ISOPROPANOL	C3.H8.O	90	60	0.8165
ISOPROPANOL	C3H8O	384	60	0.7802
UREA	CH4N2O	163	60	0.7609
2-PROPANOL	C2H6O	140	46	0.7071
ISOPROPANOL	C3.H8.O	303	60	0.6489
UREA	CH4N2O	11	60	0.5669
ISOPROPANOL	C3.H8.O	192	60	0.5547
UREA	CH4N2O	275	60	0.5092
ACETIC ACID	C2.H4.O2	194	60	0.3062

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IRON HORSE PARK
ADMINISTRATIVE RECORD

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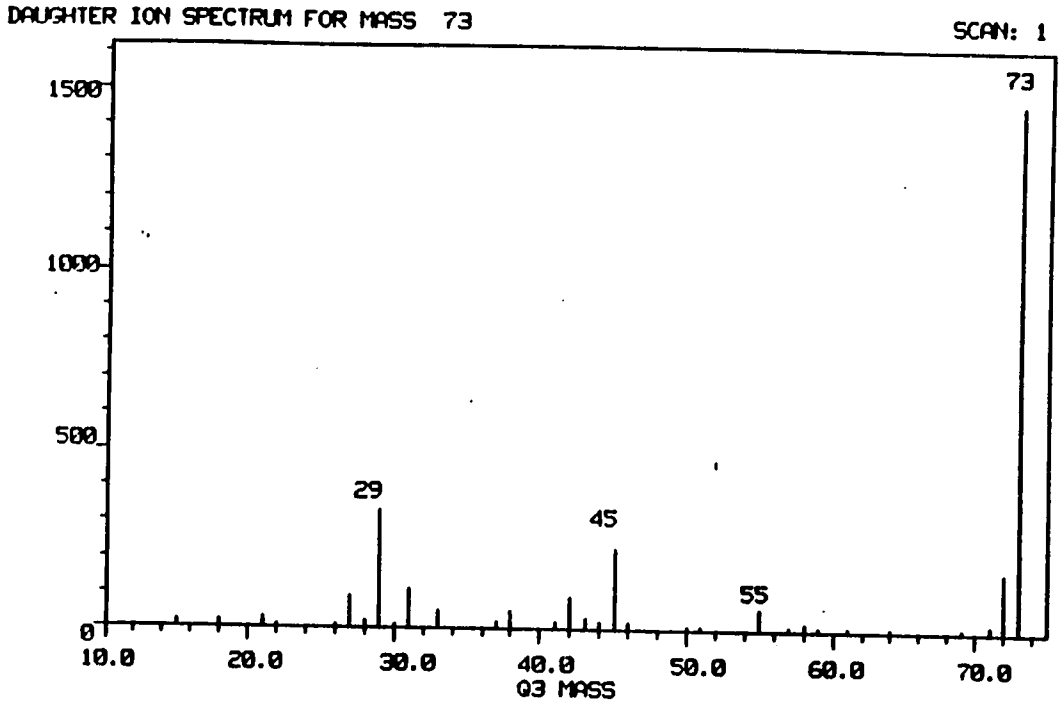
DAUGHTER ION SPECTRUM FOR MASS 73



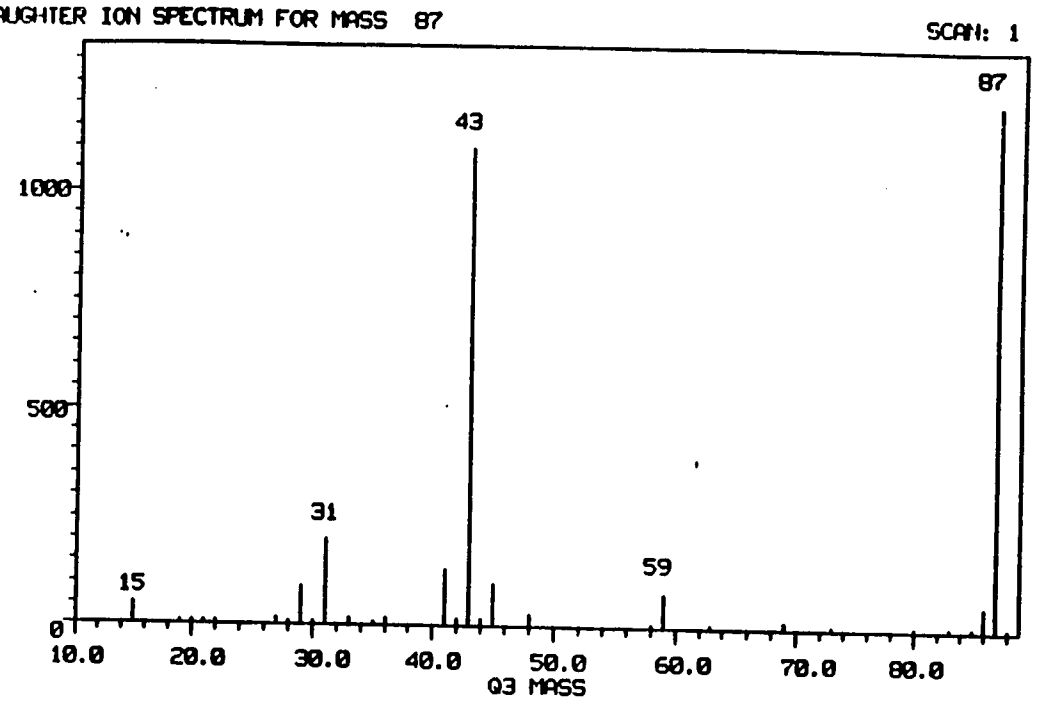
HEADSPACE THROUGH TUBING OVER B & M HOLDING POND 5/29/86

LIBRARY SEARCH RESULTS

LIBRARY FILE: TAGA6000

NAME	FORMULA	INDEX	M.W.	RESULT
METHYL ETHYL KETONE	C4.H8.O	356	72	0.7026
BUTYRALDEHYDE	C4.H8.O	188	72	0.6876
CIS EPOXYBUTANE	C4.H8.O	355	72	0.6844
BUTRALDEHYDE	C4.H8.O	308	72	0.6679
BUTYRALDEHYDE	C4.H8.O	86	72	0.4880

DAUGHTER ION SPECTRUM FOR MASS 87



HEADSPACE THROUGH TUBING OVER B & M HOLDING POND 5/29/86

LIBRARY SEARCH RESULTS

LIBRARY FILE: TAGA6000

NAME	FORMULA	INDEX	M.W.	RESULT

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ADMINISTRATIVE RECORD

IRO 003

2377

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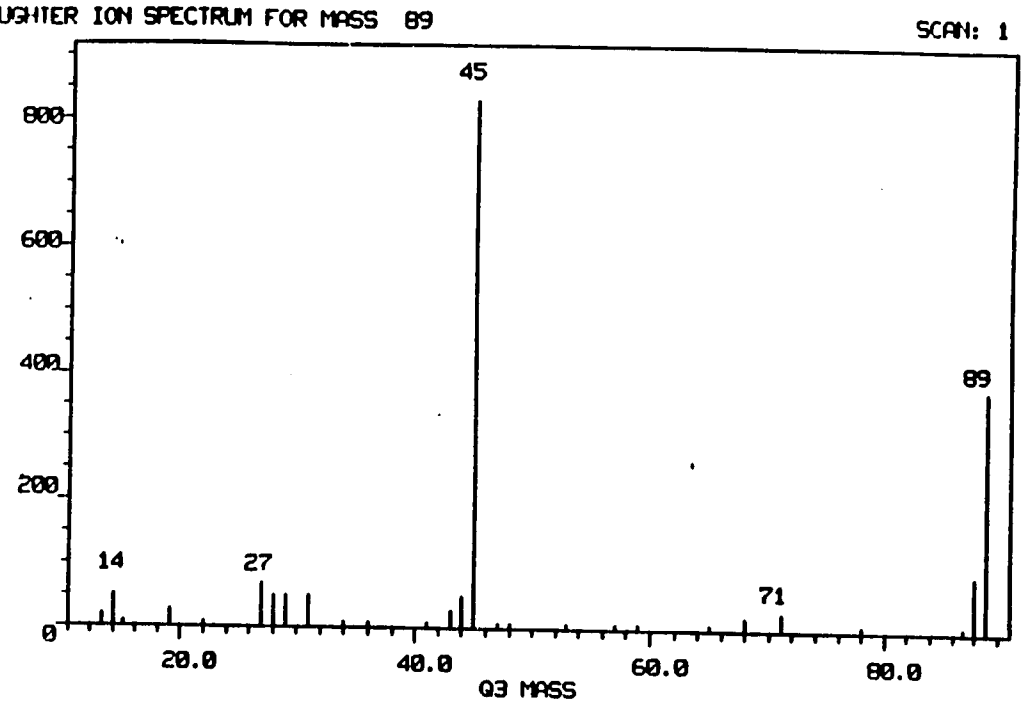
ADMINISTRATIVE RECORD

IRO 003

2178

DAUGHTER ION SPECTRUM FOR MASS 89

SCAN: 1



HEADSPACE THROUGH TUBING OVER B & M HOLDING POND 5/29/86

LIBRARY SEARCH RESULTS

LIBRARY FILE: TAGA6000

NAME	FORMULA	INDEX	M.W.	RESULT
DIOXANE	C4.H8.O2	88	88	0.9045
1,4-DIOXANE	C4.H8.O2	306	88	0.8819
DIOXANE	C4.H8.O2	190	88	0.8660
LACTIC ACID	C3H6O3	233	90	0.7609
LACTIC ACID	C3H6O3	148	90	0.7071
4-HYDROXY-2-BUTANONE	C4H8O2	124	88	0.5270
3-METHYL-1-BUTANOL	C5H12O	118	88	0.4564
3-METHYL-1-BUTANOL	C5H12O	220	88	0.4472
4-HYDROXY-2-BUTANONE	C4H8O2	221	88	0.3111

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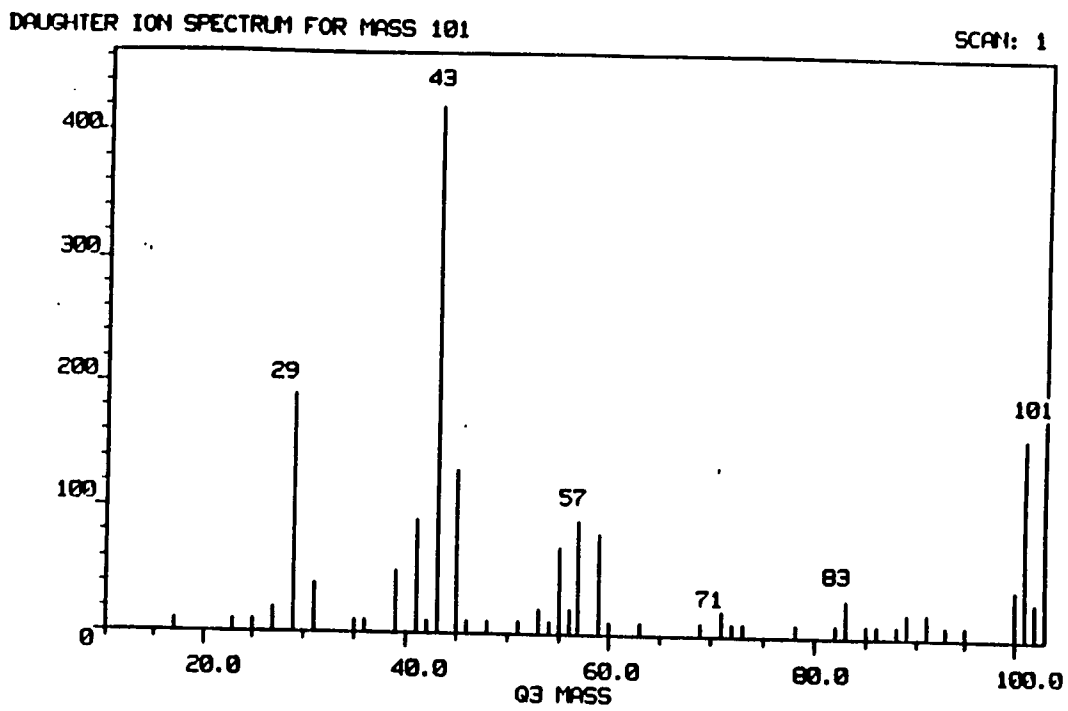
ADMINISTRATIVE RECORD

IRO 003

2379



HEADSPACE THROUGH TUBING OVER B & M HOLDING POND 5/29/86

LIBRARY SEARCH RESULTS

LIBRARY FILE: TAGA6000

NAME	FORMULA	INDEX	M.W.	RESULT
METHYLISOBUTYL KETONE	C6.H12.O	164	100	0.8660
2-METHYL-4-PENTEN-2-OL	C6.H12.O	167	100	0.8660
2-METHYL-4-PENTEN-2-OL	C6.H12.O	15	100	0.8038
3-METHYL-1-VALERALDEHYDE	C6.H12.O	173	100	0.7823
METHYL ISOBUTYL KETONE	C6.H12.O	101	100	0.7802
2-METHYL-4-PENTEN-2-OL	C6.H12.O	277	100	0.7780
METHYL ISOBUTYL KETONE	C6.H12.O	14	100	0.7746
3-METHYL-1-VALERALDEHYDE	C6.H12.O	21	100	0.7547
3-METHYL-1-VALERALDEHYDE	C6.H12.O	292	100	0.7393
5-HEXEN-3-OL	C6.H12.O	171	100	0.7249

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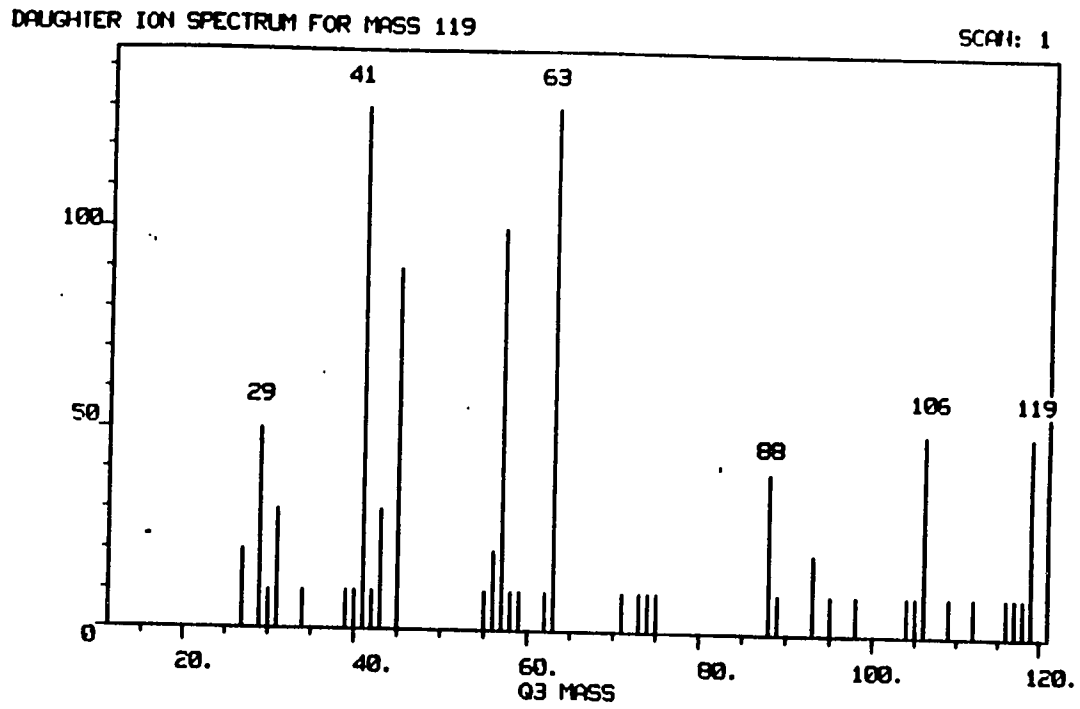
ADMINISTRATIVE RECORD



HEADSPACE THROUGH TUBING OVER B & M HOLDING POND 5/29/86

LIBRARY SEARCH RESULTS

LIBRARY FILE: TAGA6000

NAME	FORMULA	INDEX	M.W.	RESULT
BUTYL CELLOSOLVE	C6H1402	380	118	0.6086
BUTYL CELLOSOLVE	C6H1402	379	118	0.5215

IRO 003

2080

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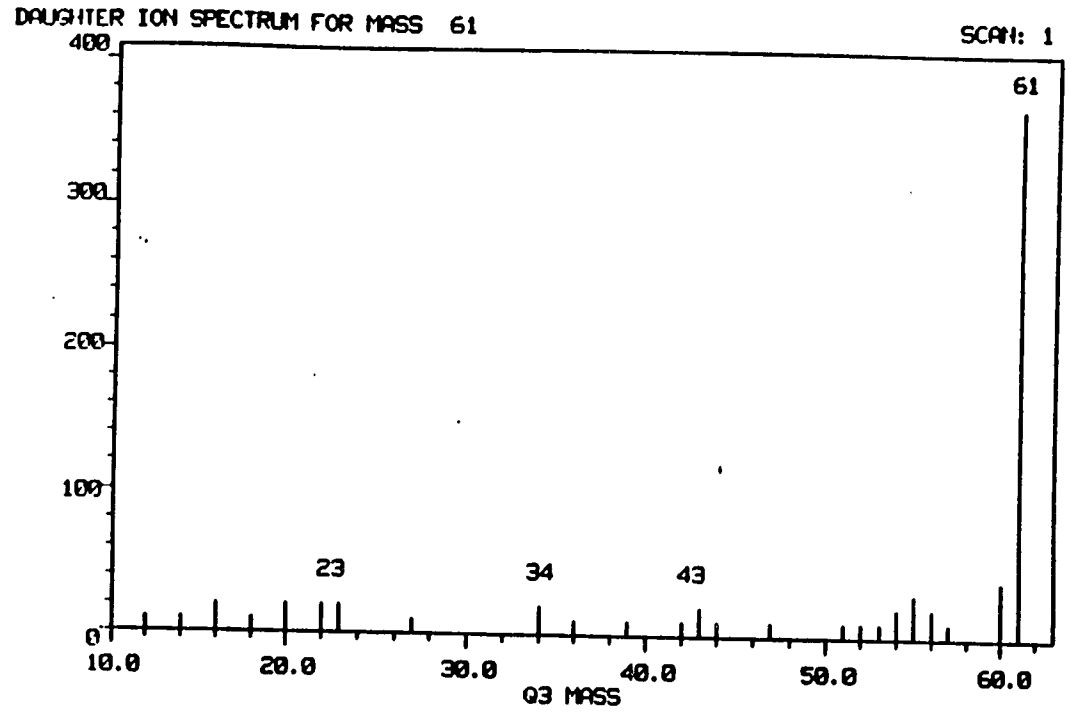
ADMINISTRATIVE RECORD



MOOSEWOOD: DOWNWIND OF LAGOON 5/29/86

LIBRARY SEARCH RESULTS

LIBRARY FILE: TAGA6000

NAME	FORMULA	INDEX	M.W.	RESULT
ACETIC ACID	C2.H4.O2	92	60	0.9428
ISOPROPANOL	C3H8O	384	60	0.7518
UREA	CH4N2O	163	60	0.7255
2-PROPANOL	C2H6O	140	46	0.7071
ISOPROPANOL	C3.H8.O	192	60	0.5883
ISOPROPANOL	C3.H8.O	90	60	0.5774
ISOPROPANOL	C3.H8.O	303	60	0.5130
UREA	CH4N2O	275	60	0.4714
UREA	CH4N2O	11	60	0.2673

IRO 003

2 3 8 1

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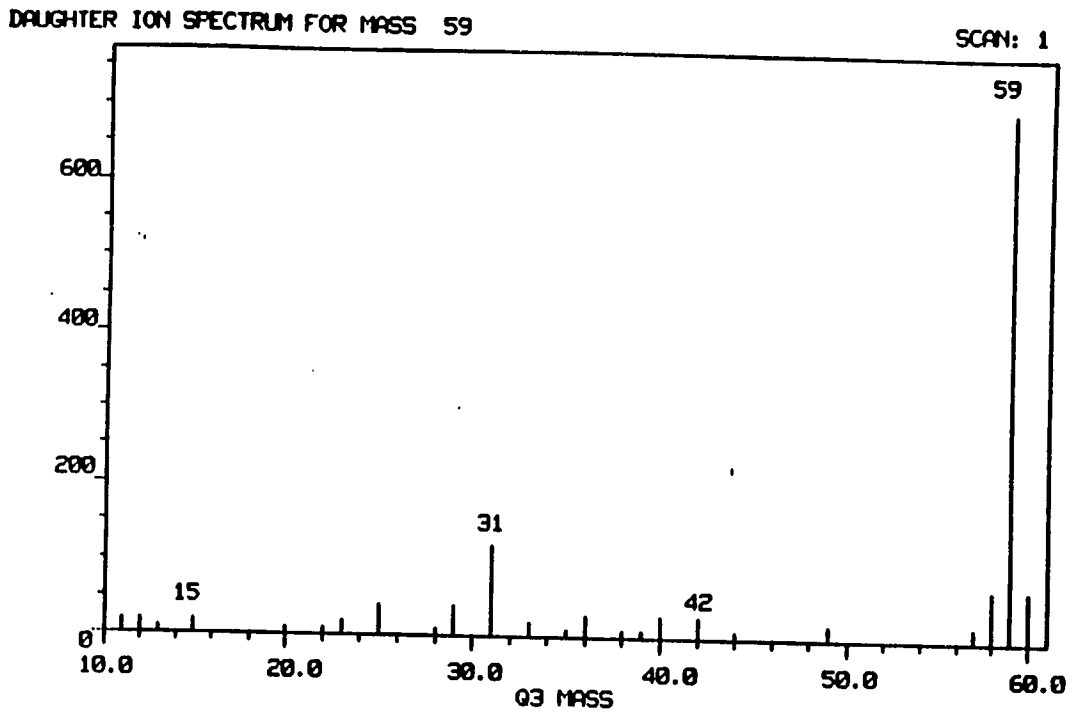
IRON HORSE PARK
ADMINISTRATIVE RECORD

IRO 003

2382



MOOSEWOOD: DOWNWIND OF LAGOON 5/29/86

LIBRARY SEARCH RESULTS

LIBRARY FILE: TAGA6000

NAME	FORMULA	INDEX	M.W.	RESULT
PROPIONALDEHYDE	C3.H6.O	91	58	0.7303
ACETONE	C3.H6.O	87	58	0.6860
ACETONE	C3.H6.O	300	58	0.6367
PROPIONALDEHYDE	C3.H6.O	193	58	0.6049
PROPYLENE OXIDE	C3H6O	53	58	0.5695
ACETONE	C3.H6.O	189	58	0.5498
PROPIONALDEHYDE	C3.H6.O	309	58	0.5477

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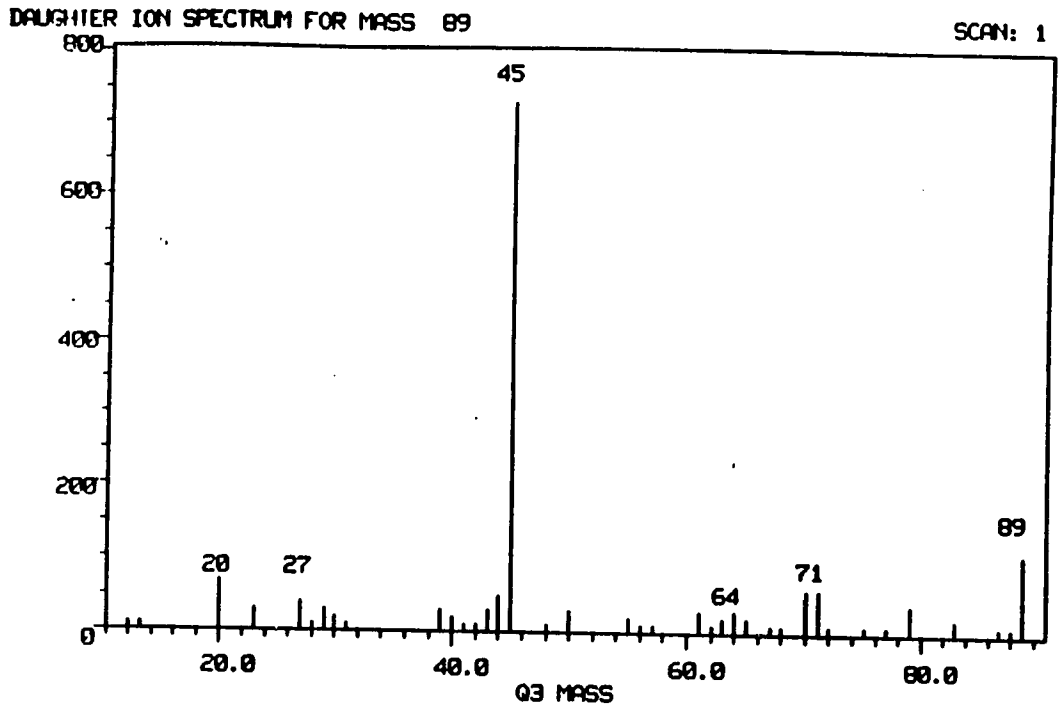
IRON HORSE PARK
ADMINISTRATIVE RECORD



MOOSEWOOD: DOWNWIND OF LAGOON 5/29/86

LIBRARY SEARCH RESULTS

LIBRARY FILE: TAGA6000

NAME	FORMULA	INDEX	M.W.	RESULT
DIOXANE	C4.H8.02	88	88	0.9045
1,4-DIOXANE	C4.H8.02	306	88	0.8165
DIOXANE	C4.H8.02	190	88	0.7792
LACTIC ACID	C3H603	233	90	0.7609
LACTIC ACID	C3H603	148	90	0.7071
3-METHYL-1-BUTANOL	C5H120	220	88	0.6761
4-HYDROXY-2-BUTANONE	C4H802	124	88	0.5774
3-METHYL-1-BUTANOL	C5H120	118	88	0.5774
4-HYDROXY-2-BUTANONE	C4H802	221	88	0.4016

IRO 003

2383

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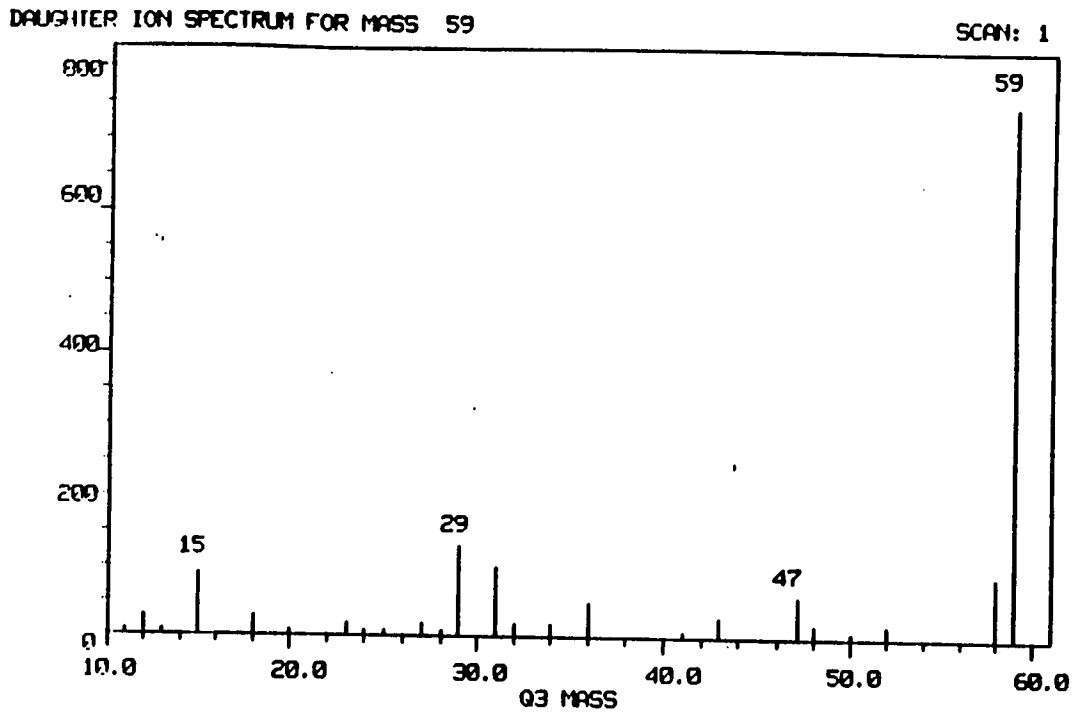
ADMINISTRATIVE RECORD



DOWNWIND OF PENN CULVERT WITH APCI (SLIGHT ODOR) 5/29/86

LIBRARY SEARCH RESULTS

LIBRARY FILE: TAGA6000

NAME	FORMULA	INDEX	M.W.	RESULT
PROPIONALDEHYDE	C3.H6.O	193	58	0.6626
ACETONE	C3.H6.O	189	58	0.6470
PROPYLENE OXIDE	C3H6O	53	58	0.6367
PROPIONALDEHYDE	C3.H6.O	309	58	0.5774
ACETONE	C3.H6.O	300	58	0.5695
ACETONE	C3.H6.O	87	58	0.5423
PROPIONALDEHYDE	C3.H6.O	91	58	0.2582

IRO 003

2384

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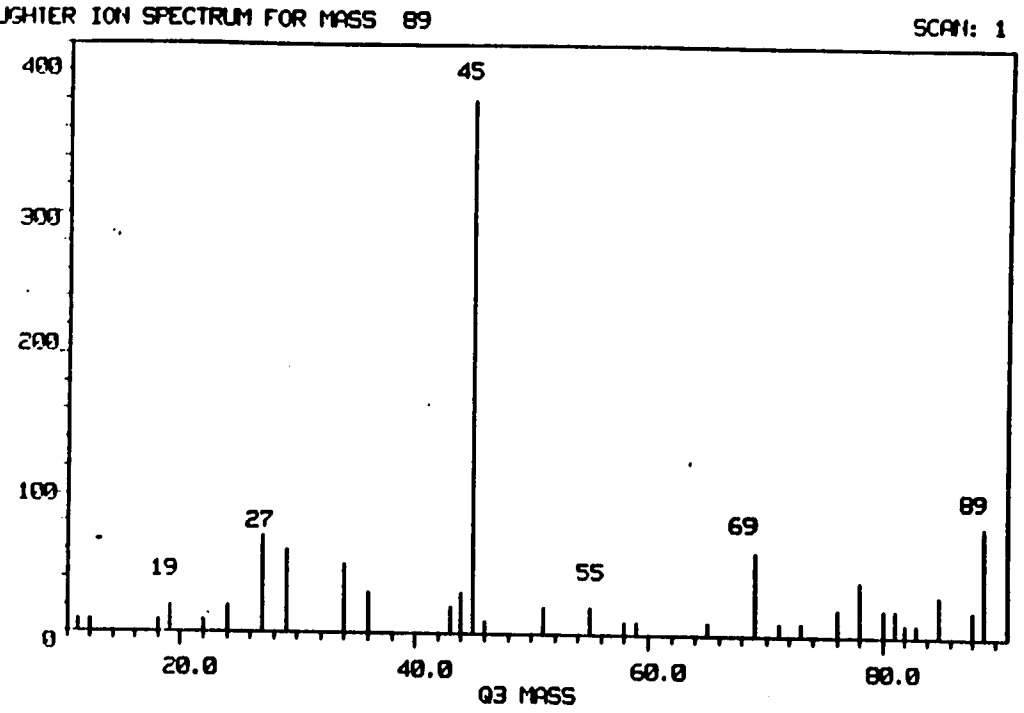
IRON HORSE PARK
ADMINISTRATIVE RECORD

IRO 003

2985

DAUGHTER ION SPECTRUM FOR MASS 89

SCAN: 1



DOWNWIND OF PENN CULVERT WITH APCI (SLIGHT ODOR) 5/29/86

LIBRARY SEARCH RESULTS

LIBRARY FILE: TAGA6000

NAME	FORMULA	INDEX	M.W.	RESULT
1,4-DIOXANE	C4.H8.O2	306	88	0.9428
DIOXANE	C4.H8.O2	190	88	0.8452
LACTIC ACID	C3H6O3	233	90	0.7947
LACTIC ACID	C3H6O3	148	90	0.7454
DIOXANE	C4.H8.O2	88	88	0.7385
3-METHYL-1-BUTANOL	C5H12O	118	88	0.4564
3-METHYL-1-BUTANOL	C5H12O	220	88	0.4140
4-HYDROXY-2-BUTANONE	C4H8O2	124	88	0.4082

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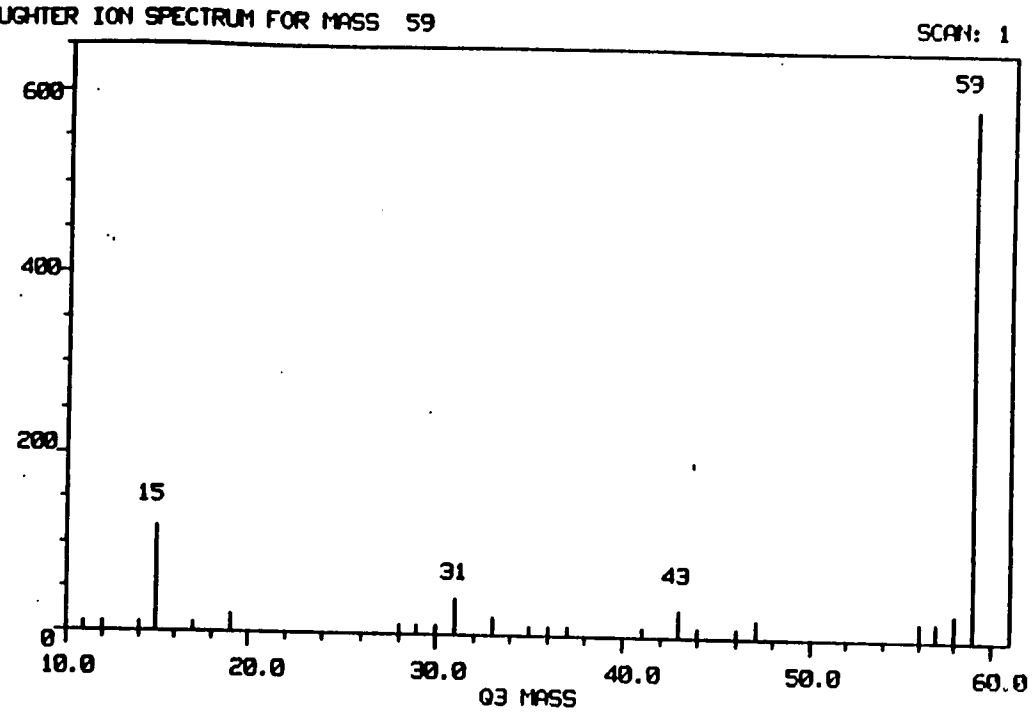
IRON HORSE PARK
ADMINISTRATIVE RECORD

IRO 003

2384

DAUGHTER ION SPECTRUM FOR MASS 59



DOWNWIND OF GENERAL LATEX WITH APCI 5/29/86

LIBRARY SEARCH RESULTS

LIBRARY FILE: TAGA6000

NAME	FORMULA	INDEX	M.W.	RESULT
ACETONE	C3.H6.O	87	58	0.7670
PROPYLENE OXIDE	C3H6O	53	58	0.6576
PROPIONALDEHYDE	C3.H6.O	91	58	0.6325
PROPIONALDEHYDE	C3.H6.O	193	58	0.5843
PROPIONALDEHYDE	C3.H6.O	309	58	0.5774
ACETONE	C3.H6.O	189	58	0.5706
ACETONE	C3.H6.O	300	58	0.5695

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ADMINISTRATIVE RECORD

IRO 003

2387

APPENDIX B

STATIONARY MONITORING CONFIRMING DAUGHTER SPECTRA

LPCI

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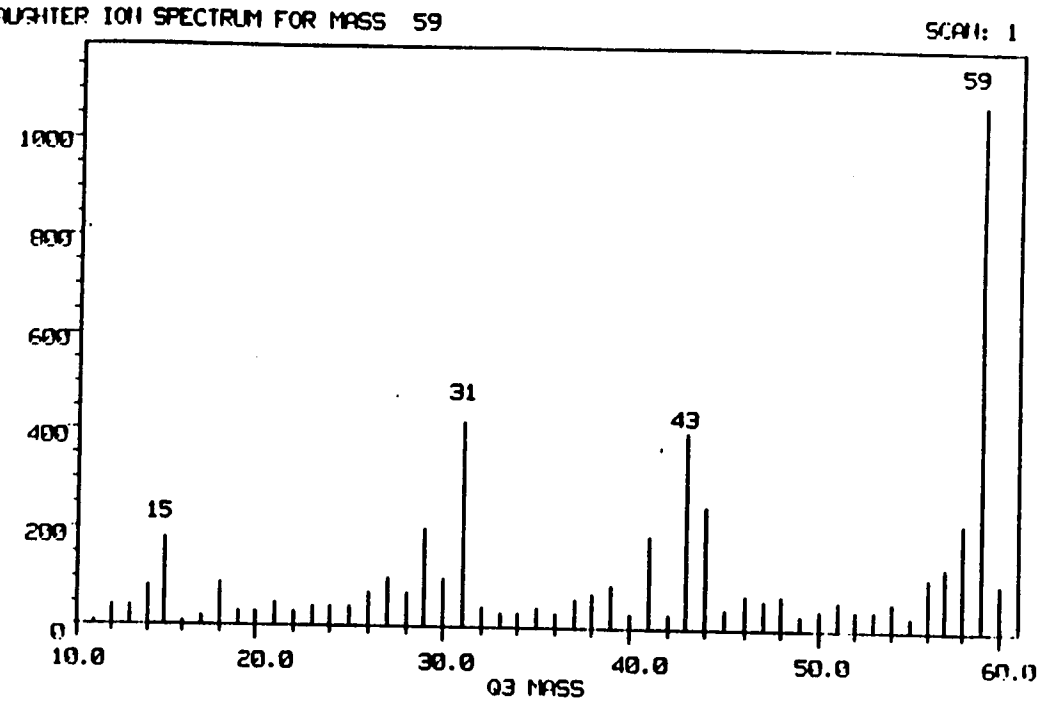
IRON HORSE PARK
ADMINISTRATIVE RECORD

IRO 003

DAUGHTER ION SPECTRUM FOR MASS 59

SCAN: 1



DOMMIND OF GENERAL LATEX 5-30-86

LIBRARY SEARCH RESULTS

LIBRARY FILE: TAGA6000

NAME	FORMULA	INDEX	M.W.	RESULT
ACETONE	C3.H6.O	300	58	0.7534
ACETONE	C3.H6.O	189	58	0.7314
PROPIONALDEHYDE	C3.H6.O	193	58	0.6984
PROPYLENE OXIDE	C3H6O	53	58	0.6975
PROPIONALDEHYDE	C3.H6.O	309	58	0.4830

2388

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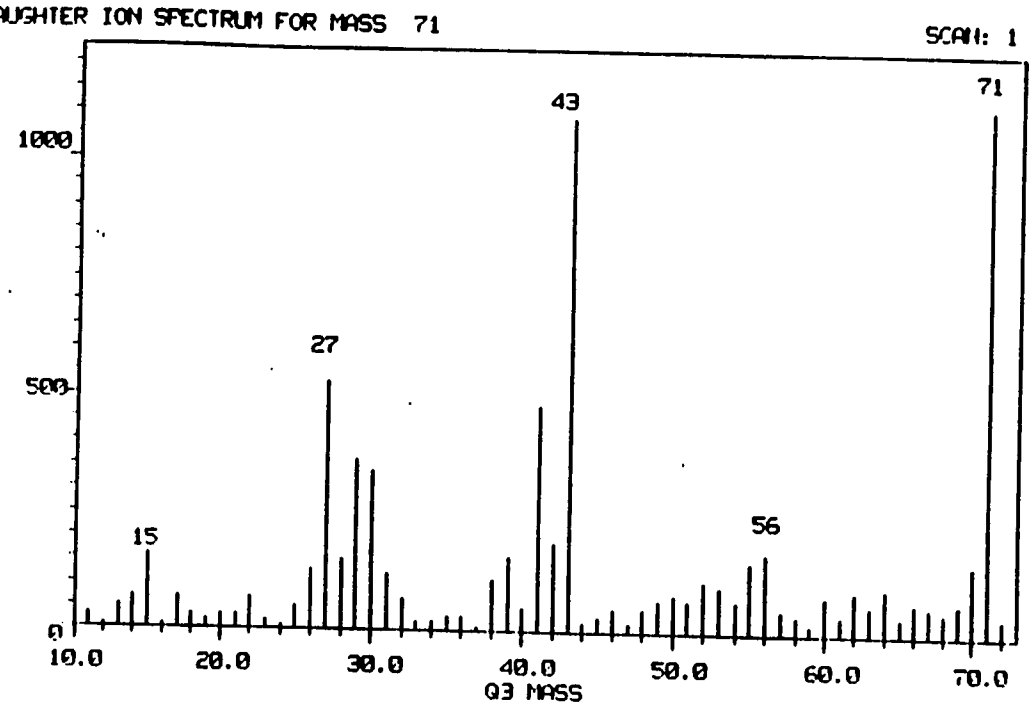
IRON HORSE PARK
ADMINISTRATIVE RECORD

IRO 003

DAUGHTER ION SPECTRUM FOR MASS 71

SCAN: 1



DOWNWIND OF GENERAL LATEX 5-30-86

LIBRARY SEARCH RESULTS

LIBRARY FILE: TAGA6000

NAME	FORMULA	INDEX	M.W.	RESULT

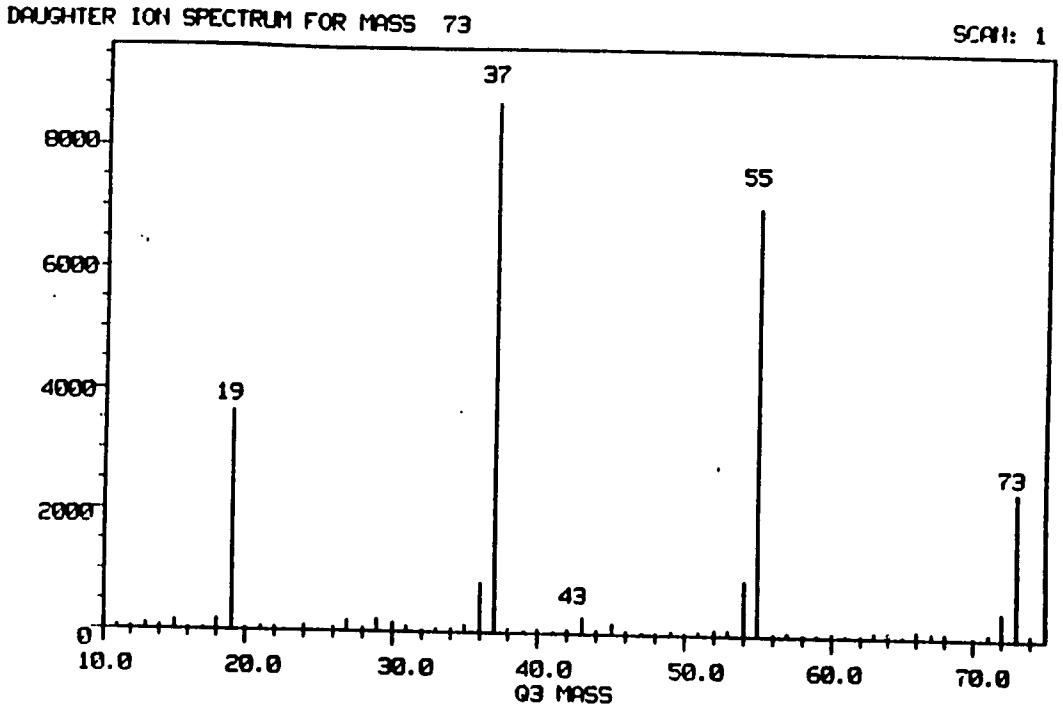
NOTICE: If the film image is less clear than this notice, it is due to the quality of the document being filmed

IRON HORSE PARK
ADMINISTRATIVE RECORD

IRO 003

DAUGHTER ION SPECTRUM FOR MASS 73

SCAN: 1



DOWNLOAD OF GENERAL LATEX 5-30-86

LIBRARY SEARCH RESULTS

LIBRARY FILE: TAGA6000

NAME	FORMULA	INDEX	M.W.	RESULT
BUTYRALDEHYDE	C4.H8.O	86	72	0.5774
BUTRALDEHYDE	C4.H8.O	308	72	0.5547
CIS EPOXYBUTANE	C4.H8.O	355	72	0.4500
BUTYRALDEHYDE	C4.H8.O	188	72	0.4264
METHYL ETHYL KETONE	C4.H8.O	356	72	0.3897

0340

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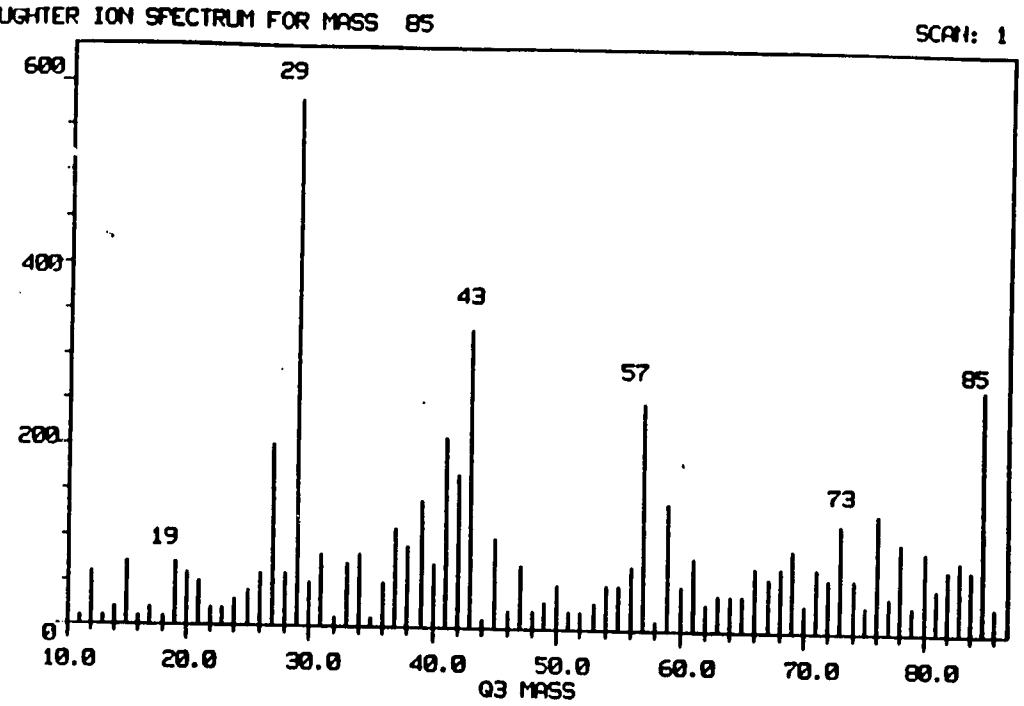
ADMINISTRATIVE RECORD

IRO 003

2391

DAUGHTER ION SPECTRUM FOR MASS 85

SCAN: 1



DOWNWIND OF GENERAL LATEX 5-30-86

LIBRARY SEARCH RESULTS

LIBRARY FILE: TAGA6000

NAME	FORMULA	INDEX	M.W.	RESULT
CHLOROFORM (85)	CHCL3	77	118	0.4959

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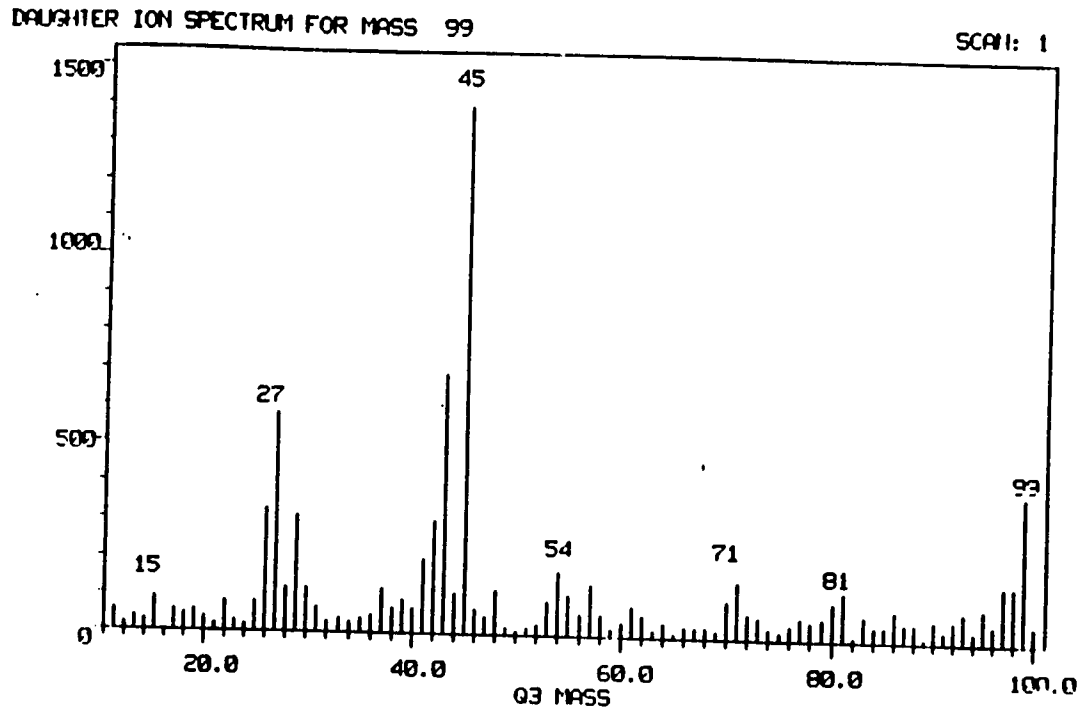
ADMINISTRATIVE RECORD



DOWNWIND OF GENERAL LATEX 5-30-86

LIBRARY SEARCH RESULTS

LIBRARY FILE: TAGA6000

NAME	FORMULA	INDEX	M.W.	RESULT
METHYLCHLOROFORM	C2H3CL3	60	132	0.6295
VINYLIDENE CHLORIDE	C2H3CL2	62	96	0.5991
ETHYLENE DICHLORIDE	C2H4CL2	49	98	0.4399
CYCLOHEXANONE	C6.H10.O	301	98	0.4243

IRO 003

2392

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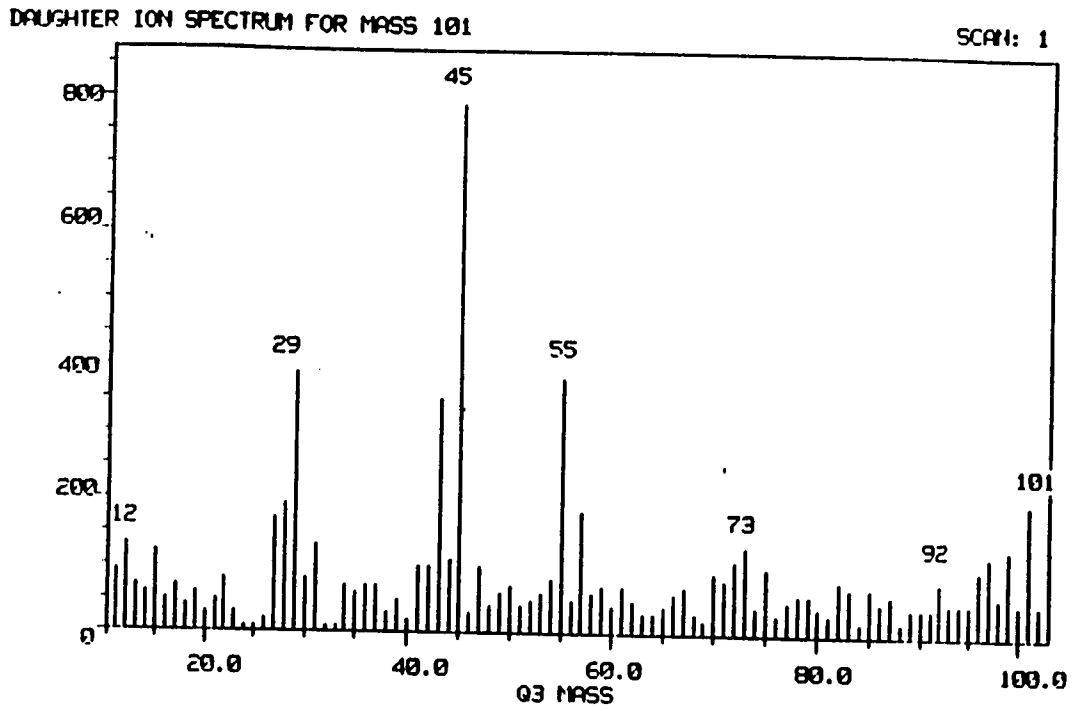
IRON HORSE PARK
ADMINISTRATIVE RECORD

IRO 003

2393

DAUGHTER ION SPECTRUM FOR MASS 101



DOWNWIND OF GENERAL LATEX 5-30-86

LIBRARY SEARCH RESULTS

LIBRARY FILE: TAGA6000

NAME	FORMULA	INDEX	M.W.	RESULT
3-METHYL-1-VALERALDEHYDE	C6.H12.O	292	100	0.7548
2-METHYL-4-PENTEN-2-OL	C6.H12.O	15	100	0.7545
METHYLISOBUTYL KETONE	C6.H12.O	164	100	0.7500
2-METHYL-4-PENTEN-2-OL	C6.H12.O	167	100	0.7500
2-METHYL-4-PENTEN-2-OL	C6.H12.O	277	100	0.7434
4-METHYL-4-PENTEN-2-OL	C6.H12.O	16	100	0.6901
3-METHYL-1-VALERALDEHYDE	C6.H12.O	21	100	0.6844
4-METHYL-4-PENTEN-2-OL	C6.H12.O	278	100	0.6268
BUTYL VINYL ETHER	C6.H12.O	282	100	0.6216
3-METHYL-1-VALERALDEHYDE	C6.H12.O	173	100	0.5985

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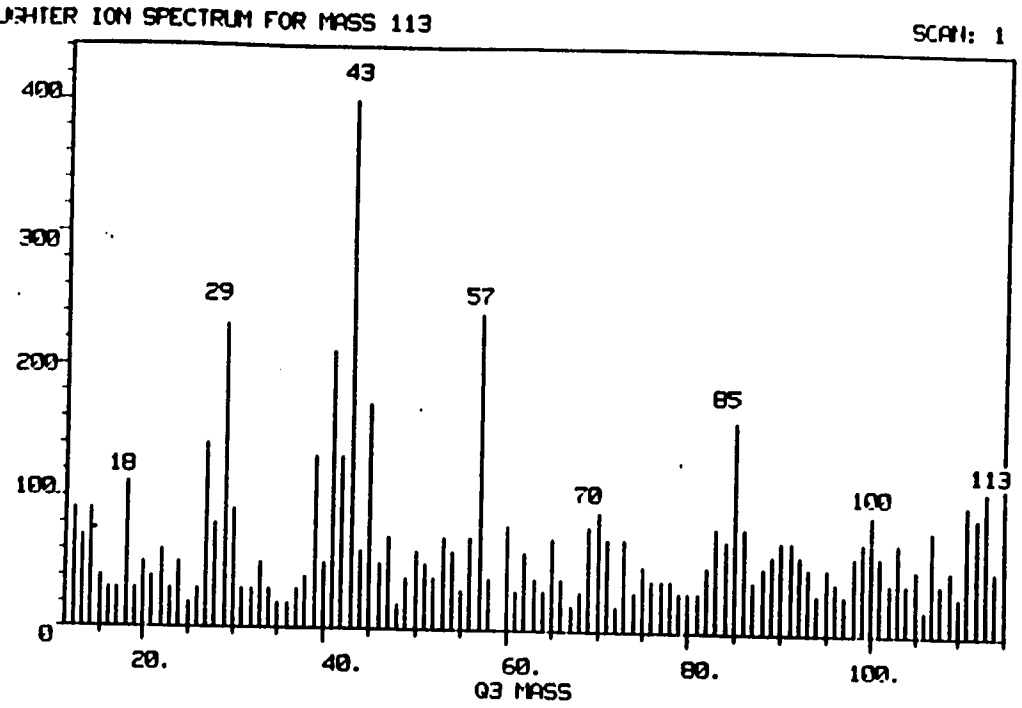
IRON HORSE PARK
ADMINISTRATIVE RECORD

IRO 003

2394

DAUGHTER ION SPECTRUM FOR MASS 113

SCAN: 1



DOWNWIND OF GENERAL LATEX 5-30-86

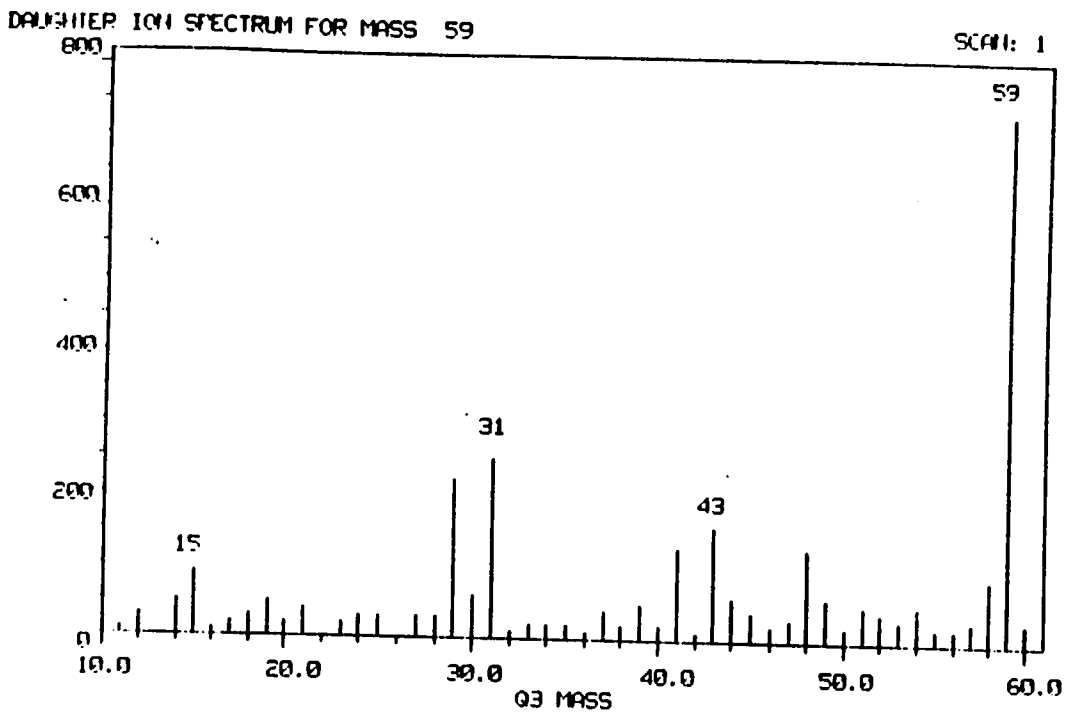
LIBRARY SEARCH RESULTS

LIBRARY FILE: TAGA6000

NAME	FORMULA	INDEX	M.W.	RESULT

NOTICE: If the film image is less clear than this notice, it is due to the quality of the document being filmed

IRON HORSE PARK
ADMINISTRATIVE RECORD



BACKGROUND AT HOME HIGH SCHOOL 5-30-86

LIBRARY SEARCH RESULTS

LIBRARY FILE: TAGA6000

NAME	FORMULA	INDEX	M.W.	RESULT
PROPYLENE OXIDE	C3H6O	53	58	0.7711
PROPIONALDEHYDE	C3.H6.O	193	58	0.7490
ACETONE	C3.H6.O	300	58	0.7166
ACETONE	C3.H6.O	189	58	0.6820
PROPIONALDEHYDE	C3.H6.O	309	58	0.6055

IRO 003

2395

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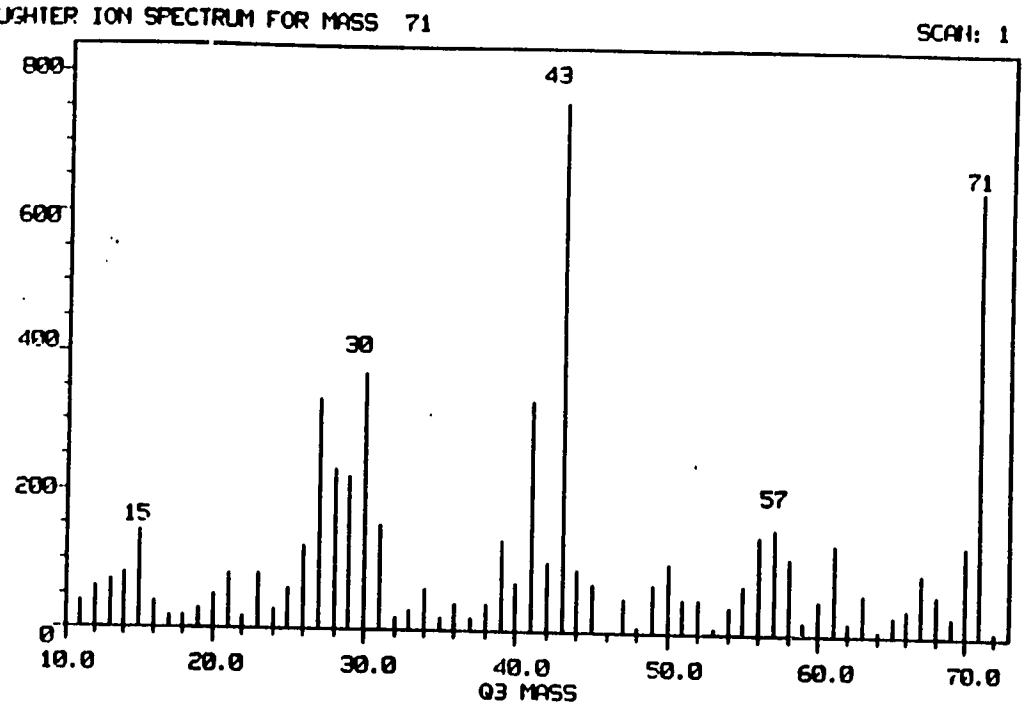
IRON HORSE PARK
ADMINISTRATIVE RECORD

IRO 003

0464

DAUGHTER ION SPECTRUM FOR MASS 71

SCAN: 1



BACKGROUND AT HOME HIGH SCHOOL 5-30-86

LIBRARY SEARCH RESULTS

LIBRARY FILE: TAGA6000

NAME	FORMULA	INDEX	M.W.	RESULT

NOTICE: If the film image is less clear than this notice, it is due to the quality of the document being filmed

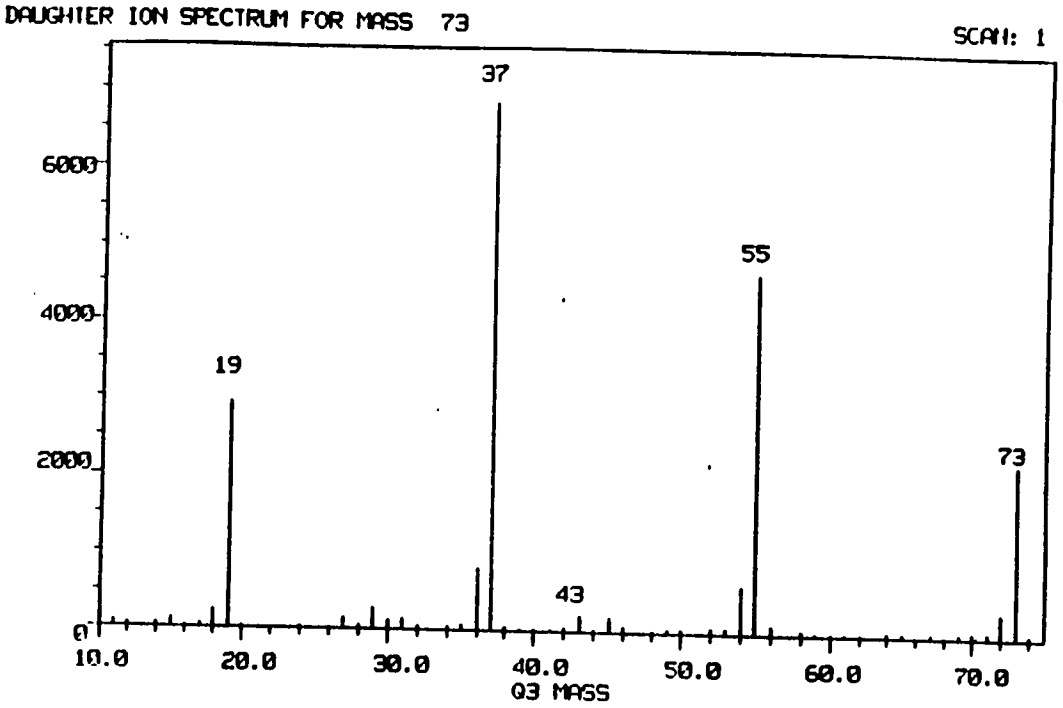
IRON HORSE PARK
ADMINISTRATIVE RECORD

IRO 003

2347

DAUGHTER ION SPECTRUM FOR MASS 73

SCAN: 1



BACKGROUND AT HOWE HIGH SCHOOL 5-30-86

LIBRARY SEARCH RESULTS

LIBRARY FILE: TAGA6000

NAME	FORMULA	INDEX	M.W.	RESULT
BUTYRALDEHYDE	C4.H8.O	86	72	0.6172
BUTRALDEHYDE	C4.H8.O	308	72	0.5547
BUTYRALDEHYDE	C4.H8.O	188	72	0.4671
CIS EPOXYBUTANE	C4.H8.O	355	72	0.4357
METHYL ETHYL KETONE	C4.H8.O	356	72	0.4057

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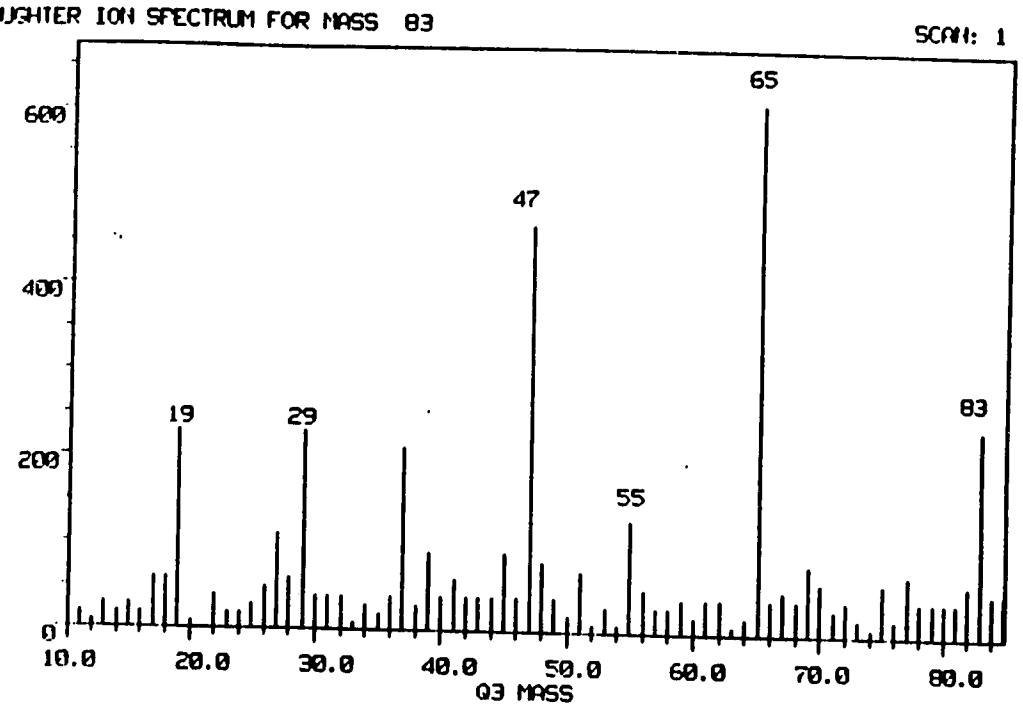
IRON HORSE PARK
ADMINISTRATIVE RECORD

IRO 003

2 3 4 8

DAUGHTER ION SPECTRUM FOR MASS 83

SCAN: 1



BACKGROUND AT HOME HIGH SCHOOL 5-30-86

LIBRARY SEARCH RESULTS

LIBRARY FILE: TAGA6000

NAME	FORMULA	INDEX	M.W.	RESULT
METHLENE CHLORIDE	CH2CL2	55	84	0.6325

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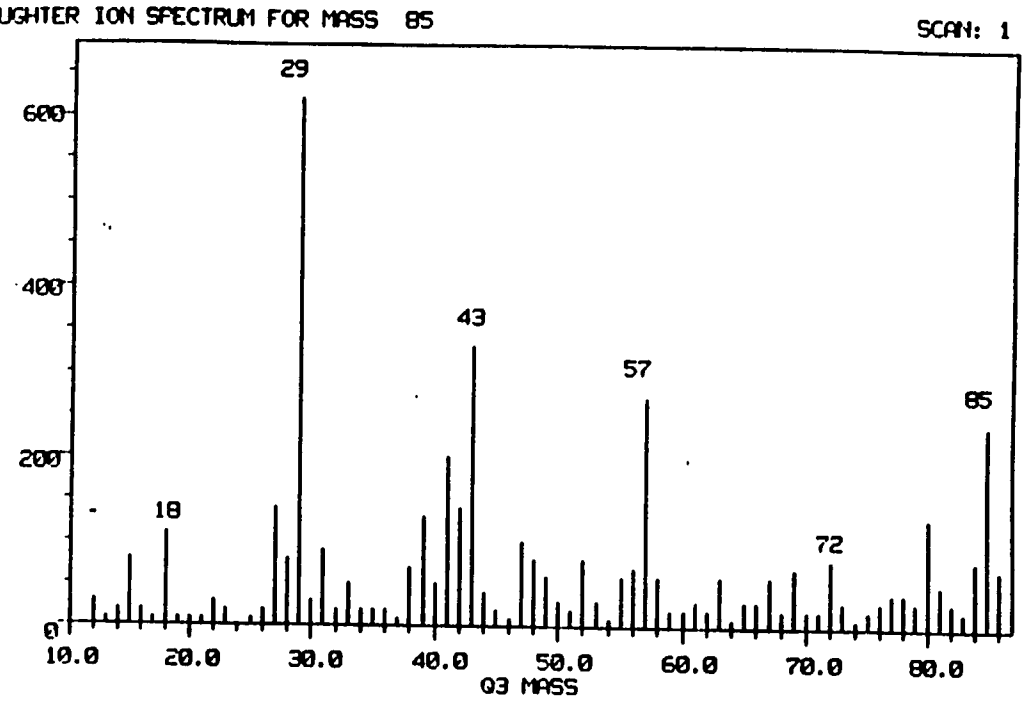
IRON HORSE PARK
ADMINISTRATIVE RECORD

IRO 003

2449

DAUGHTER ION SPECTRUM FOR MASS 85

SCAN: 1



BACKGROUND AT HOWE HIGH SCHOOL 5-30-86

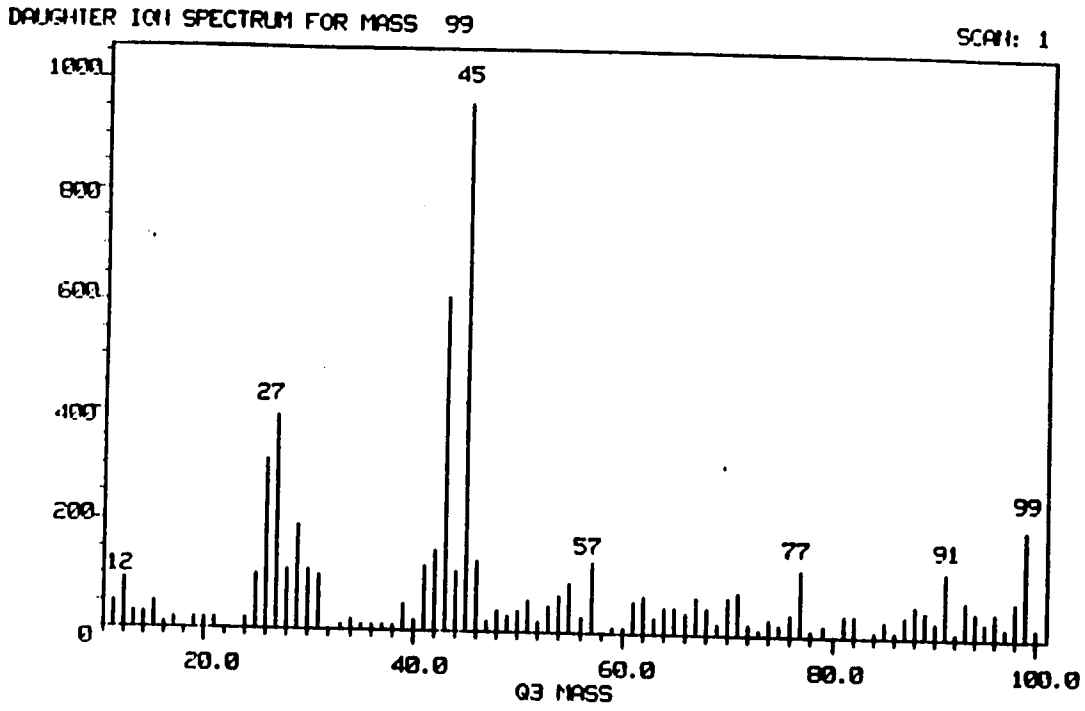
LIBRARY SEARCH RESULTS

LIBRARY FILE: TAGA6000

NAME	FORMULA	INDEX	M.W.	RESULT
CHLOROFORM (85)	CHCL3	77	118	0.5726
METHYLENE CHLORIDE	CH2CL2	56	84	0.3381

NOTICE: If the film image is less clear than this notice, it is due to the quality of the document being filmed

IRON HORSE PARK
ADMINISTRATIVE RECORD



BACKGROUND AT HOME HIGH SCHOOL 5-30-86

LIBRARY SEARCH RESULTS

LIBRARY FILE: TAGA6000

NAME	FORMULA	INDEX	M.W.	RESULT
METHYLCHLOROFORM	C2H3CL3	60	132	0.7004
VINYLIDENE CHLORIDE	C2H3CL2	62	96	0.6794
CYCLOHEXANONE	C6.H10.O	301	98	0.5099

IRO 003

2400

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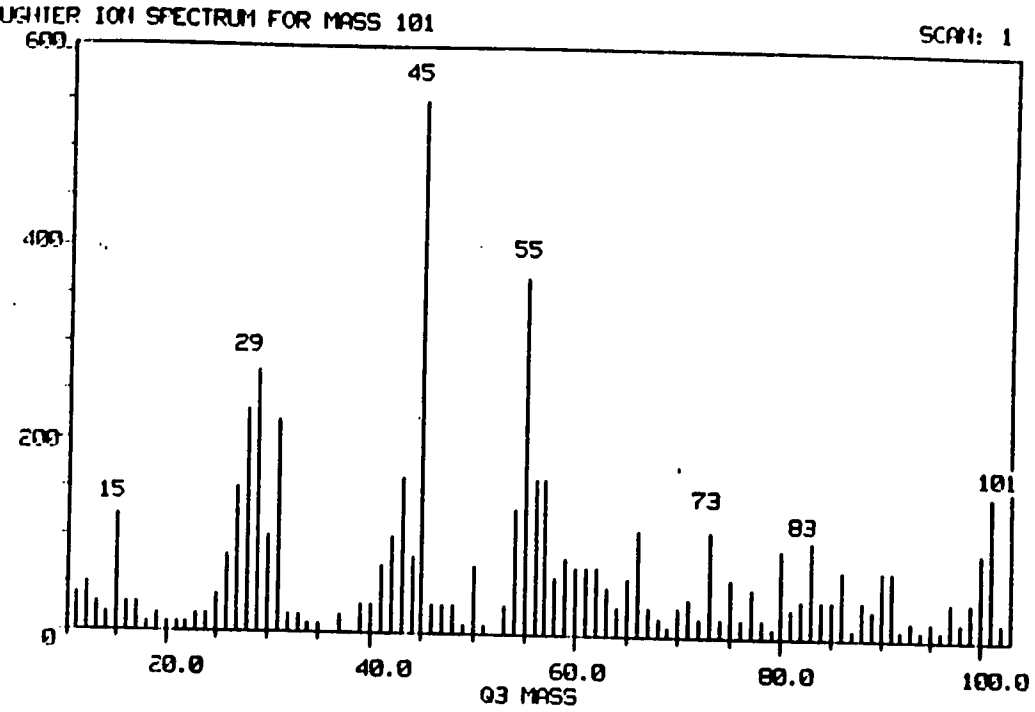
IRON HORSE PARK
ADMINISTRATIVE RECORD

IRO 003

2401

DAUGHTER ION SPECTRUM FOR MASS 101



BACKGROUND AT HOME HIGH SCHOOL 5-30-86

LIBRARY SEARCH RESULTS

LIBRARY FILE: TAGA6000

NAME	FORMULA	INDEX	M.W.	RESULT
2-METHYL-4-PENTEN-2-OL	C6.H12.O	167	100	0.7638
METHYLISOBUTYL KETONE	C6.H12.O	164	100	0.7638
2-METHYL-4-PENTEN-2-OL	C6.H12.O	15	100	0.7232
2-METHYL-4-PENTEN-2-OL	C6.H12.O	277	100	0.7164
3-METHYL-1-VALERALDEHYDE	C6.H12.O	292	100	0.7153
3-METHYL-1-VALERALDEHYDE	C6.H12.O	21	100	0.6463
4-METHYL-4-PENTEN-2-OL	C6.H12.O	16	100	0.6172
CYCLOHEXANOL	C6.H12.O	94	100	0.6070
5-HEXEN-1-OL	C6.H12.O	17	100	0.5774
3-METHYL-1-VALERALDEHYDE	C6.H12.O	173	100	0.5730

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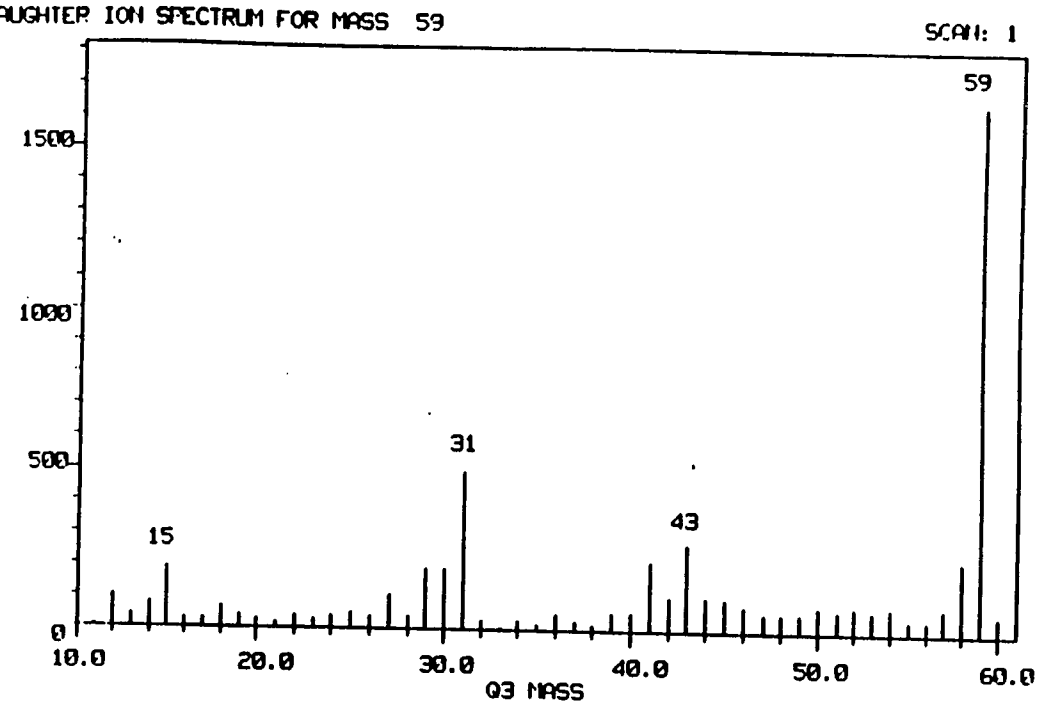
IRON HORSE PARK
ADMINISTRATIVE RECORD

IRO 003

2402

DAUGHTER ION SPECTRUM FOR MASS 59



FILE: BIL019
MOOSEWOOD DOWN WIND OF THE LANDFILL 5-30-86 LPCI

LIBRARY SEARCH RESULTS

LIBRARY FILE: TAGA6000

NAME	FORMULA	INDEX	M.W.	RESULT
PROPIONALDEHYDE	C3.H6.O	193	58	0.7490
PROPYLENE OXIDE	C3H6O	53	58	0.7166
ACETONE	C3.H6.O	189	58	0.6988
ACETONE	C3.H6.O	300	58	0.6975
PROPIONALDEHYDE	C3.H6.O	309	58	0.5164
ACETONE	C3.H6.O	87	58	0.4201

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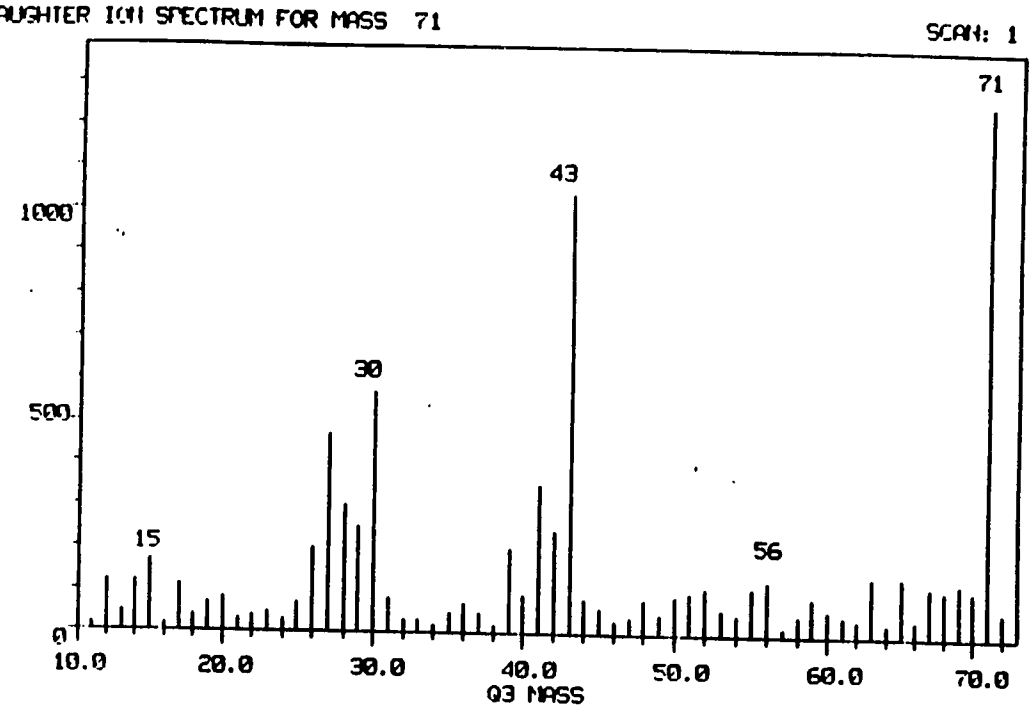
IRON HORSE PARK
ADMINISTRATIVE RECORD

DAUGHTER ION SPECTRUM FOR MASS 71

SCAN: 1



FILE: BIL027
MOOSEWOOD DOWN WIND OF THE LANDFILL 5-30-86 LPCI

LIBRARY SEARCH RESULTS

LIBRARY FILE: TAGA6000

NAME	FORMULA	INDEX	M.W.	RESULT

IRO 003

E040

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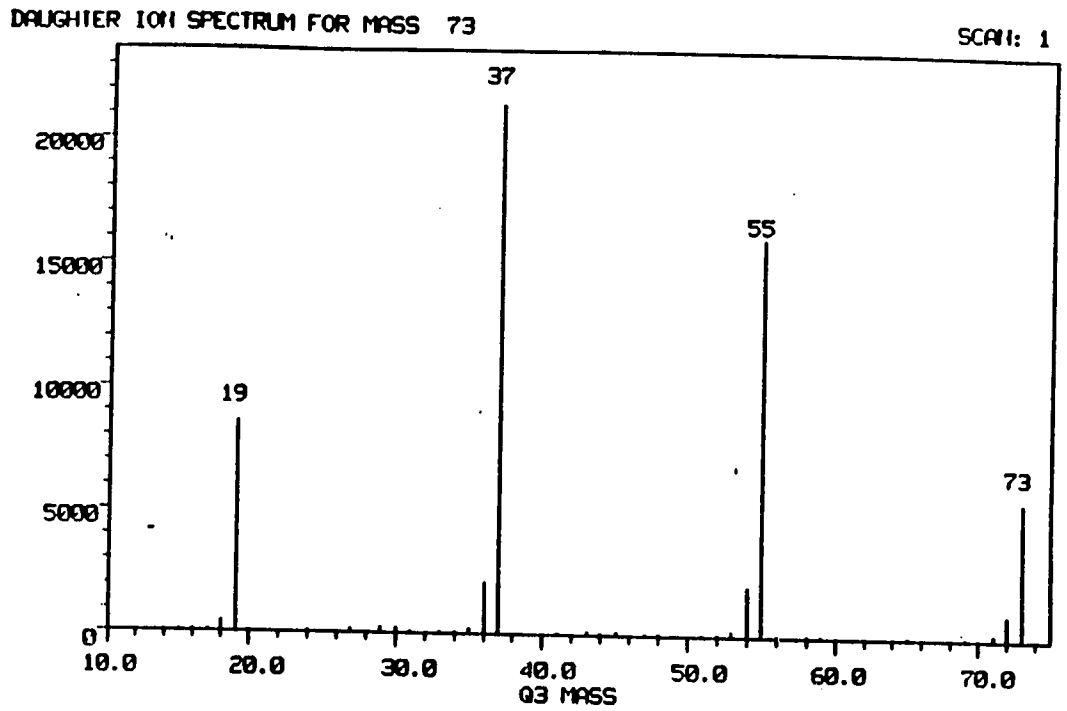
IRON HORSE PARK
ADMINISTRATIVE RECORD



FILE: BIL023
MOOSEWOOD DOWN WIND OF THE LANDFILL 5-30-86 LPCI

LIBRARY SEARCH RESULTS

LIBRARY FILE: TAGA6000

NAME	FORMULA	INDEX	M.W.	RESULT
BUTYRALDEHYDE	C4.H8.O	308	72	0.5114
BUTYRALDEHYDE	C4.H8.O	86	72	0.4364
CIS EPOXYBUTANE	C4.H8.O	355	72	0.3558
BUTYRALDEHYDE	C4.H8.O	188	72	0.3303
METHYL ETHYL KETONE	C4.H8.O	356	72	0.2756

IRO 003

2404

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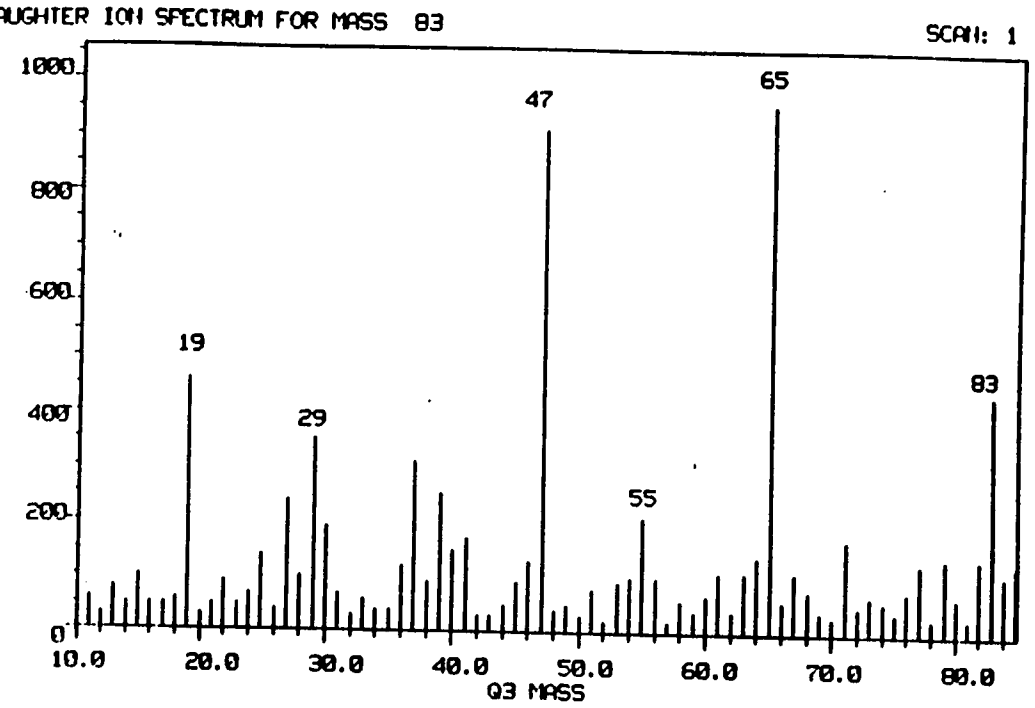
IRON HORSE PARK
ADMINISTRATIVE RECORD

IRO 003

2405

DAUGHTER ION SPECTRUM FOR MASS 83

SCAN: 1



FILE: BIL028
MOOSEWOOD DOWN WIND OF THE LANDFILL 5-30-86 LPCI

LIBRARY SEARCH RESULTS

LIBRARY FILE: TAGA6000

NAME	FORMULA	INDEX	M.W.	RESULT
METHYLENE CHLORIDE	CH2CL2	55	84	0.3651

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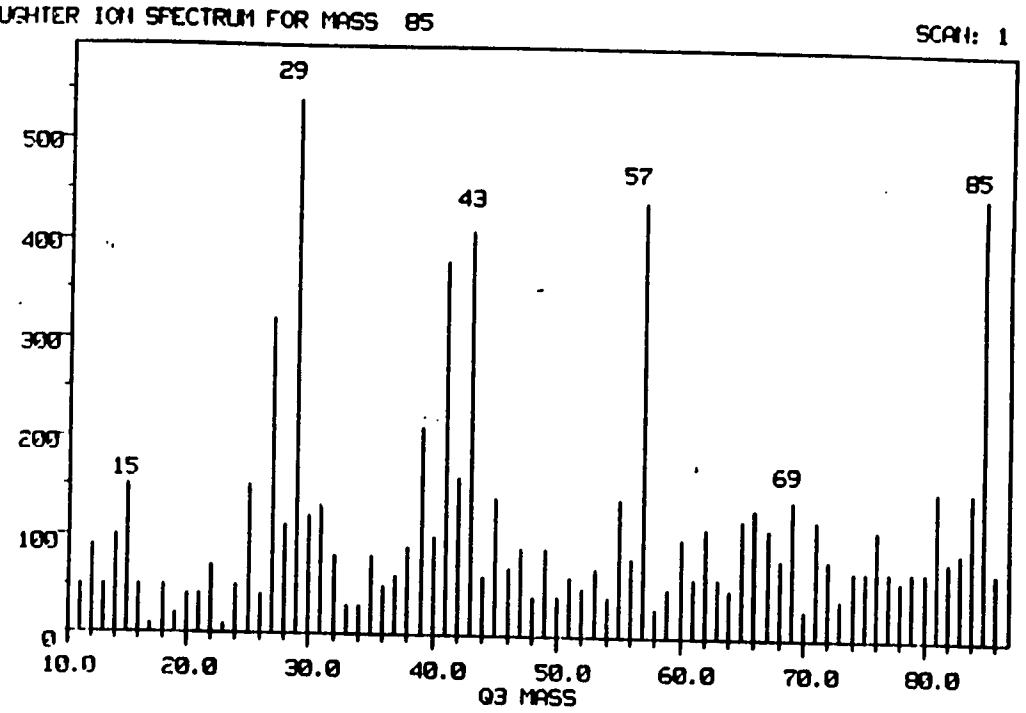
IRON HORSE PARK
ADMINISTRATIVE RECORD

DAUGHTER ION SPECTRUM FOR MASS 85

SCAN: 1



FILE: BIL029
MOOSEWOOD DOWN WIND OF THE LANDFILL 5-30-86 LPCI

LIBRARY SEARCH RESULTS

LIBRARY FILE: TAGA6000

NAME	FORMULA	INDEX	M.W.	RESULT

IRO 003

2404

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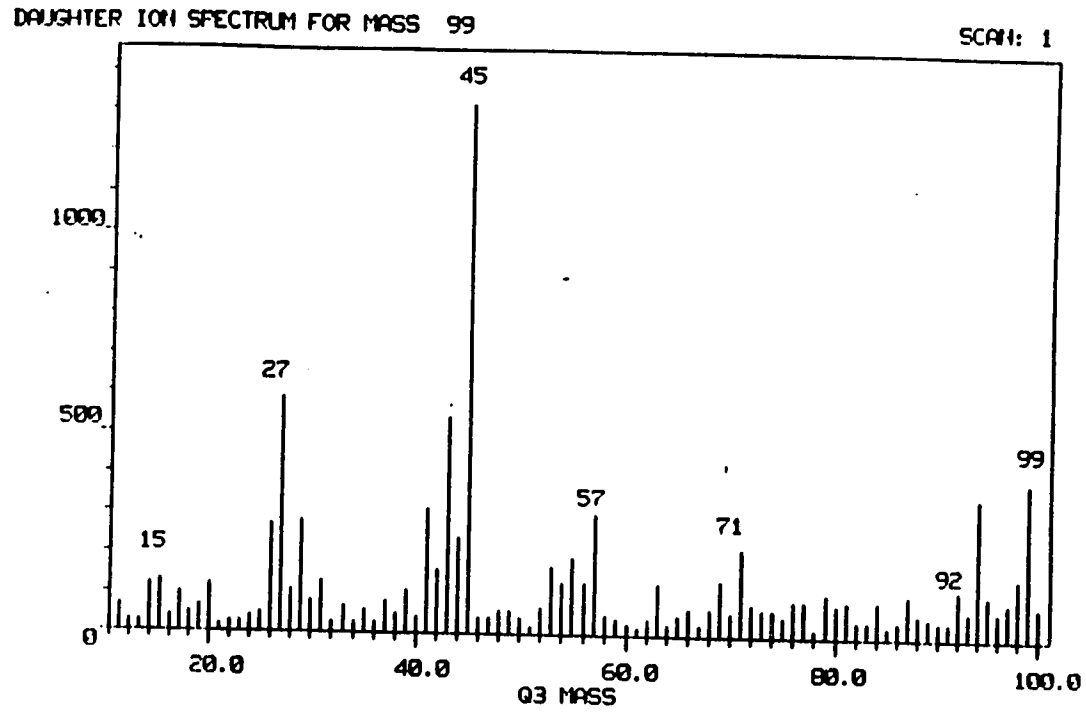
IRON HORSE PARK
ADMINISTRATIVE RECORD



FILE: BIL031
MOOSEWOOD DOWN WIND OF THE LANDFILL 5-30-86 LPCI

LIBRARY SEARCH RESULTS

LIBRARY FILE: TAGA6000

NAME	FORMULA	INDEX	M.W.	RESULT
VINYLIDENE CHLORIDE	C2H3CL2	62	96	0.6602
METHYLCHLOROFORM	C2H3CL3	60	132	0.6588
CYCLOHEXANONE	C6.H10.O	301	98	0.4899
ETHYLENE DICHLORIDE	C2H4CL2	49	98	0.3111

IRO 003

2407

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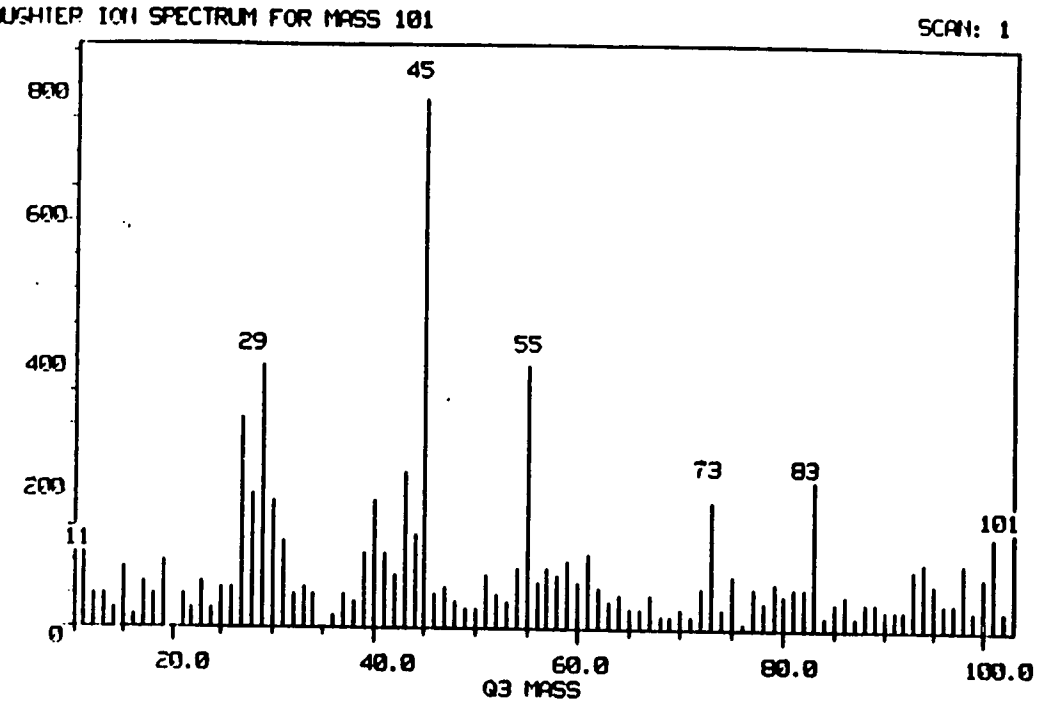
IRON HORSE PARK
ADMINISTRATIVE RECORD

IRO 003

2408

DAUGHTER ION SPECTRUM FOR MASS 101

SCAN: 1



FILE: BIL025
MOOSEWOOD DOWN WIND OF THE LANDFILL 5-30-86 LPCI

LIBRARY SEARCH RESULTS

LIBRARY FILE: TAGA6000

NAME	FORMULA	INDEX	M.W.	RESULT
2-METHYL-4-PENTEN-2-OL	C6.H12.O	277	100	0.7522
2-METHYL-4-PENTEN-2-OL	C6.H12.O	15	100	0.7442
2-METHYL-4-PENTEN-2-OL	C6.H12.O	167	100	0.7360
METHYLISOBUTYL KETONE	C6.H12.O	164	100	0.7360
3-METHYL-1-VALERALDEHYDE	C6.H12.O	292	100	0.7071
4-METHYL-4-PENTEN-2-OL	C6.H12.O	16	100	0.6547
CYCLOHEXANOL	C6.H12.O	94	100	0.6489
3-METHYL-1-VALERALDEHYDE	C6.H12.O	21	100	0.6264
3-METHYL-1-VALERALDEHYDE	C6.H12.O	173	100	0.5985
CYCLOHEXANOL-	C6.H12.O	280	100	0.5732

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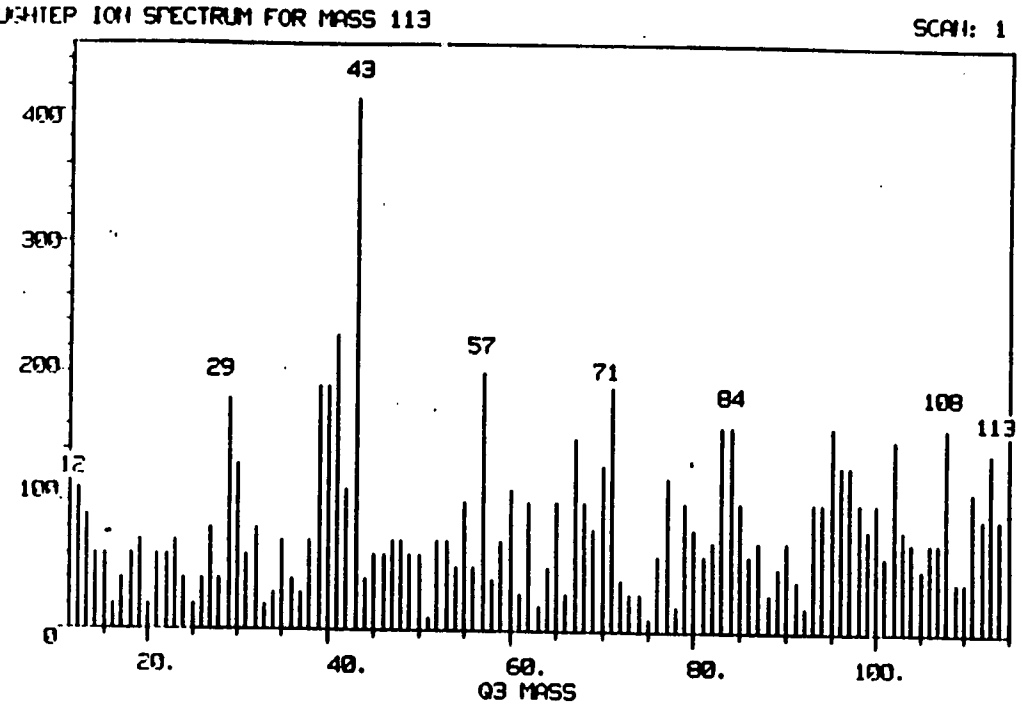
IRON HORSE PARK
ADMINISTRATIVE RECORD

DAUGHTER ION SPECTRUM FOR MASS 113

SCAN: 1



FILE: BIL033
MOOSEWOOD DOWN WIND OF THE LANDFILL 5-30-86 LPCI

LIBRARY SEARCH RESULTS

LIBRARY FILE: TAGA6000

NAME	FORMULA	INDEX	M.W.	RESULT

IRO 003

2409

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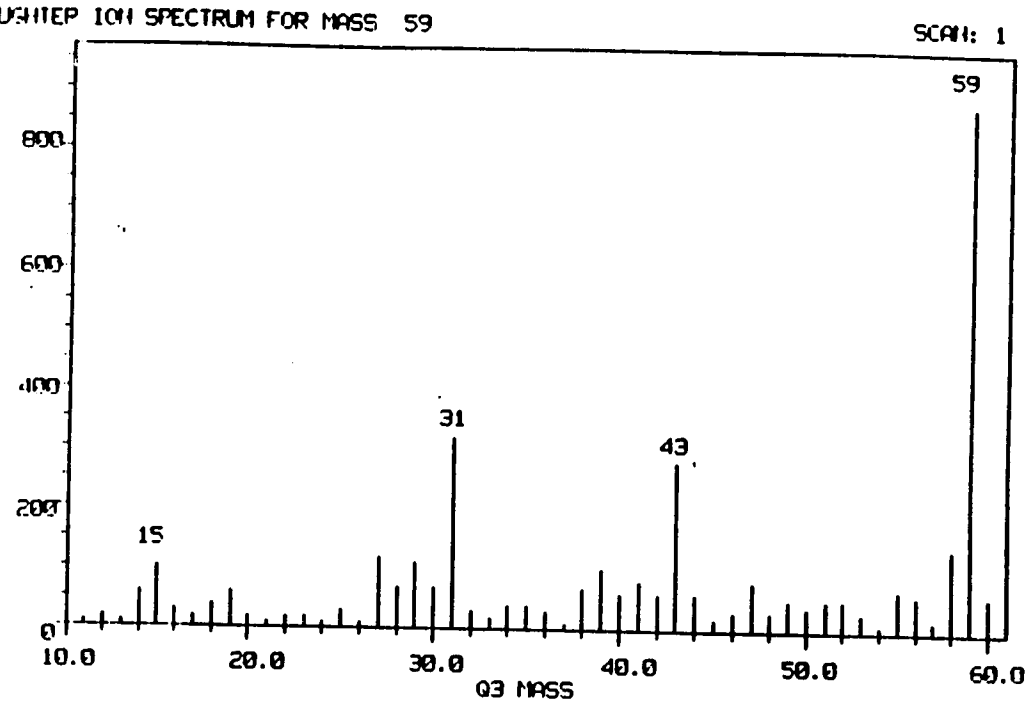
IRON HORSE PARK
ADMINISTRATIVE RECORD

DAUGHTER ION SPECTRUM FOR MASS 59



FILE: BIL017
HEADSPACE DOWN WIND OF B & M HOLDING POND 5-30-86

LIBRARY SEARCH RESULTS

LIBRARY FILE: TMSA6000

NAME	FORMULA	INDEX	M.W.	RESULT
ACETONE	C3.H6.O	300	58	0.7534
ACETONE	C3.H6.O	189	58	0.7314
PROPIONALDEHYDE	C3.H6.O	193	58	0.7157
PROPYLENE OXIDE	C3H6O	53	58	0.6975
PROPIONALDEHYDE	C3.H6.O	309	58	0.5477
ACETONE	C3.H6.O	87	58	0.4851

IRO 003

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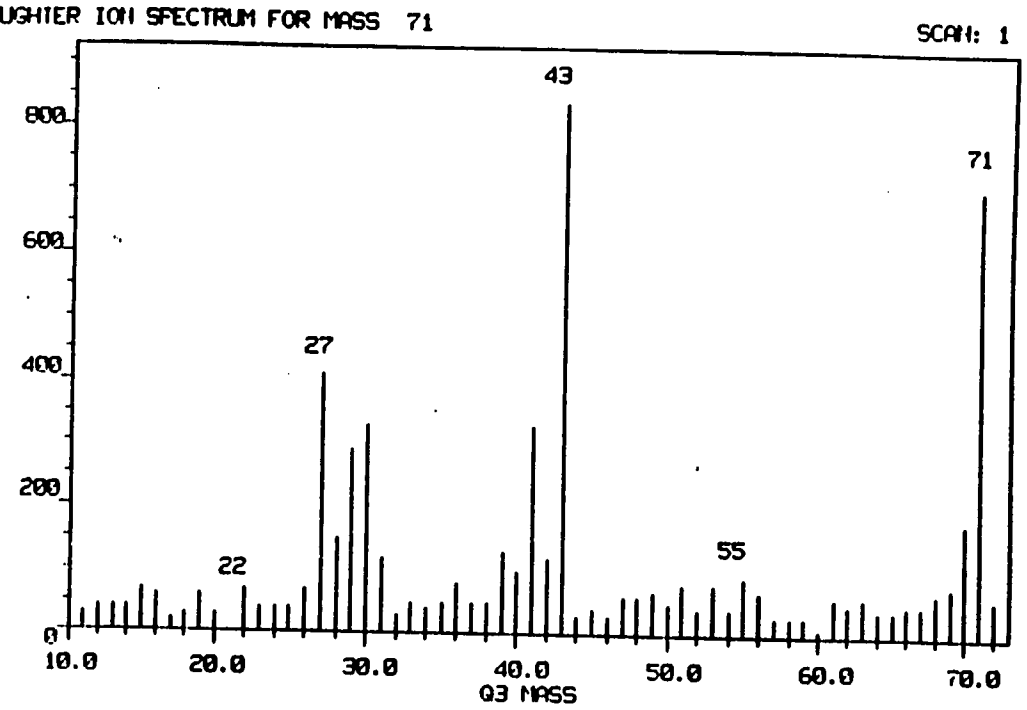
IRON HORSE PARK
ADMINISTRATIVE RECORD

DAUGHTER ION SPECTRUM FOR MASS 71

SCAN: 1



FILE: BIL025
HEADSPACE DOWN WIND OF B & M HOLDING POND 5-30-86

LIBRARY SEARCH RESULTS

LIBRARY FILE: TAGA6000

NAME	FORMULA	INDEX	M.W.	RESULT

IRO 003

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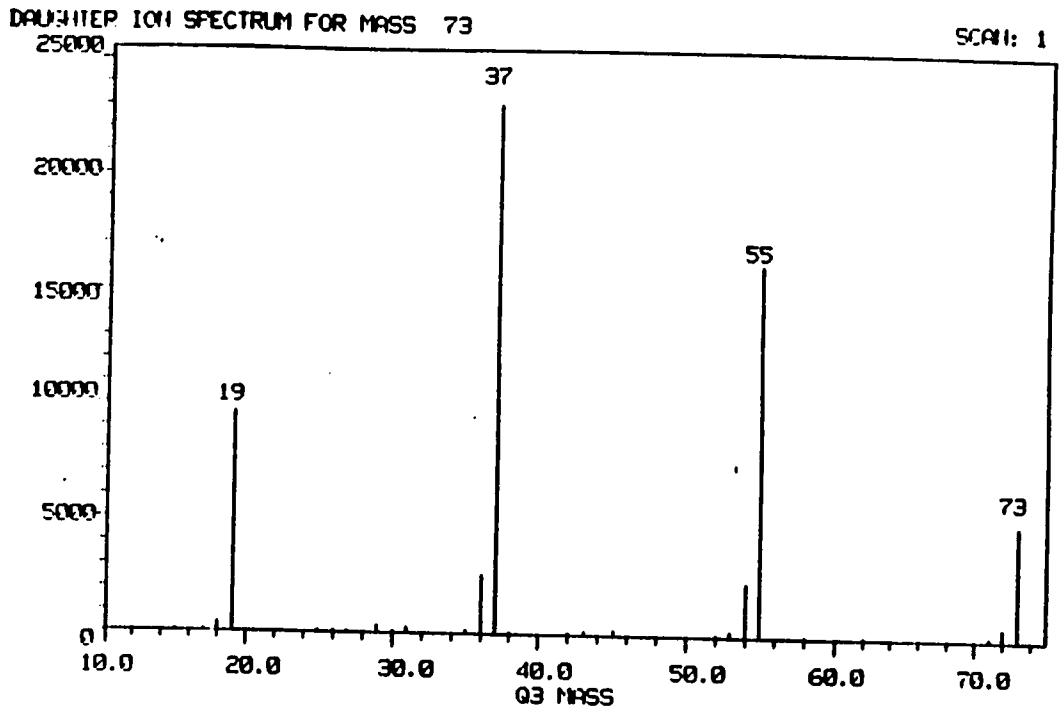
IRON HORSE PARK
ADMINISTRATIVE RECORD



FILE: DIL021
HEADSPACE DOWN WIND OF B & M HOLDING POND 5-30-86

LIBRARY SEARCH RESULTS

LIBRARY FILE: TAGA6000

NAME	FORMULA	INDEX	M.W.	RESULT
BUTYRALDEHYDE	C4.H8.O	309	72	0.4961
BUTYRALDEHYDE	C4.H8.O	86	72	0.4880
CIS EPOXYBUTANE	C4.H8.O	355	72	0.3897
BUTYRALDEHYDE	C4.H8.O	188	72	0.3303
METHYL ETHYL KETONE	C4.H8.O	356	72	0.3182

IRO 003

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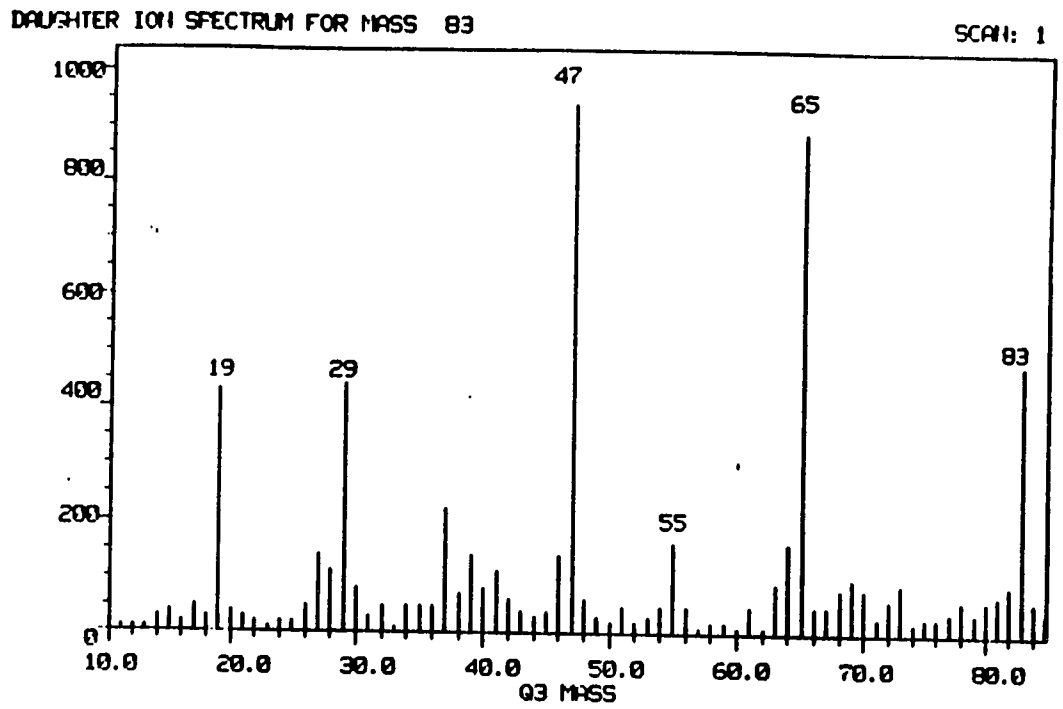
IRON HORSE PARK
ADMINISTRATIVE RECORD



HEADSPACE OVER B & M HOLDING POND 5-30-86

LIBRARY SEARCH RESULTS

LIBRARY FILE: TAGA6000

NAME	FORMULA	INDEX	M.W.	RESULT
METHYLENE CHLORIDE	CH2CL2	55	84	0.5164

IRO 003

241E

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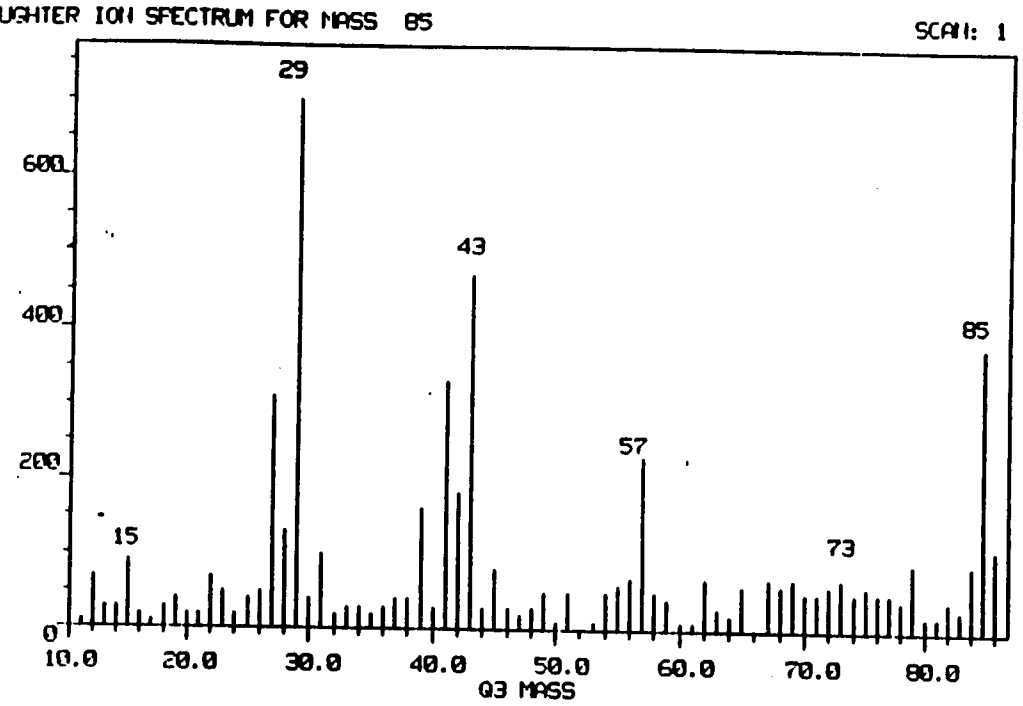
IRON HORSE PARK
ADMINISTRATIVE RECORD

IRO 003

244

DAUGHTER ION SPECTRUM FOR MASS 85

SCAN: 1



HEADSPACE OVER B & M HOLDING POND 5-30-86

LIBRARY SEARCH RESULTS

LIBRARY FILE: TAGA6000

NAME	FORMULA	INDEX	M.W.	RESULT
CHLOROFORM (85)	CHCL3	77	118	0.5121

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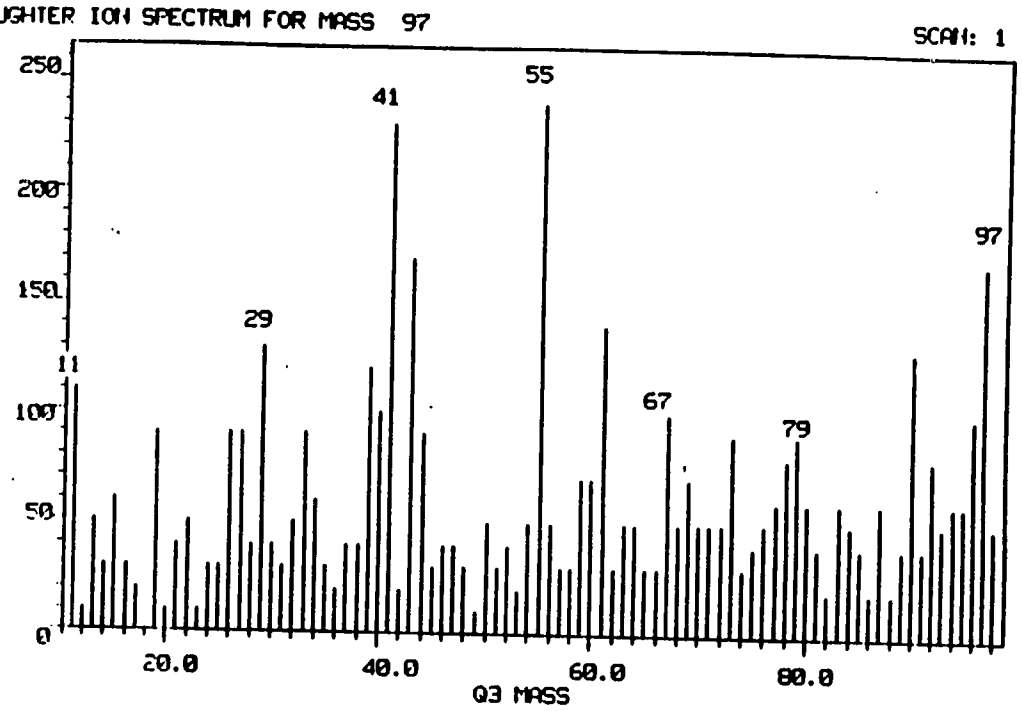
IRON HORSE PARK
ADMINISTRATIVE RECORD

IRO 003

2415

DAUGHTER ION SPECTRUM FOR MASS 97



FILE: BIL028
HEADSPACE DOWN WIND OF B & M HOLDING POND 5-30-86

LIBRARY SEARCH RESULTS

LIBRARY FILE: TAGA6000

NAME	FORMULA	INDEX	M.W.	RESULT
M/Z-97 FROM UFFI	?	144	96	0.9381
VINYLIDENE CHLORIDE	C2H3CL2	61	96	0.7201

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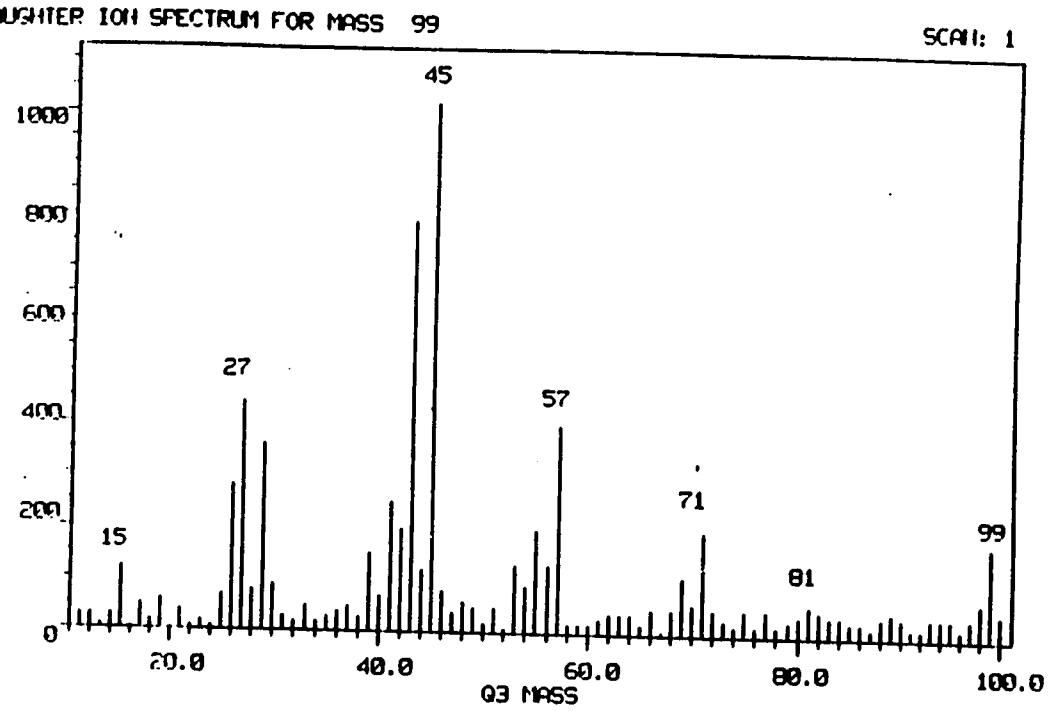
IRON HORSE PARK
ADMINISTRATIVE RECORD

IRO 003

2416

DAUGHTER ION SPECTRUM FOR MASS 99



FILE: BIL029
HEADSPACE DOWN WIND OF B & M HOLDING POND 5-30-86

LIBRARY SEARCH RESULTS

LIBRARY FILE: TASA6000

NAME	FORMULA	INDEX	M.W.	RESULT
VINYLIDENE CHLORIDE	C2H3CL2	62	96	0.5774
METHYLCHLOROFORM	C2H3CL3	60	132	0.5140
CYCLOHEXANONE	C6.H10.O	301	98	0.3742

NOTICE: If the film image is less clear than this notice, it is due to the quality of the document being filmed

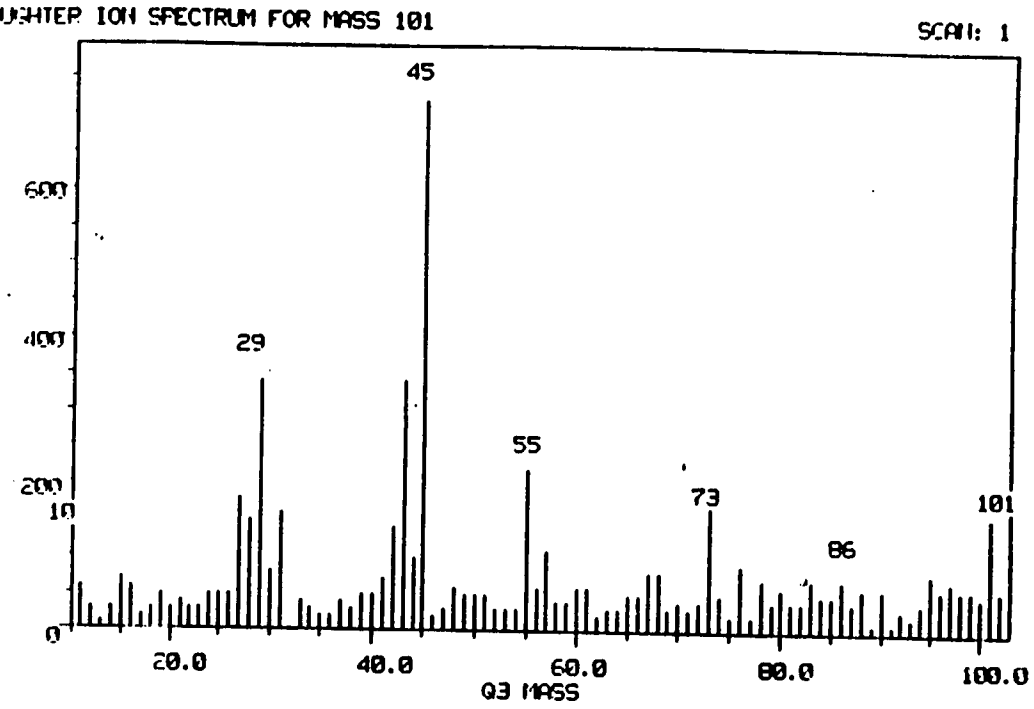
IRON HORSE PARK
ADMINISTRATIVE RECORD

IRO 003

241

DAUGHTER ION SPECTRUM FOR MASS 101

SCAN: 1



FILE: BIL023
HEADSPACE DOWN WIND OF B & M HOLDING POND 5-30-86

LIBRARY SEARCH RESULTS

LIBRARY FILE: IAGA6000

NAME	FORMULA	INDEX	M.W.	RESULT
3-METHYL-1-VALERALDEHYDE	C6.H12.O	292	100	0.7701
2-METHYL-4-PENTEN-2-OL	C6.H12.O	277	100	0.7609
2-METHYL-4-PENTEN-2-OL	C6.H12.O	15	100	0.7545
3-METHYL-1-VALERALDEHYDE	C6.H12.O	21	100	0.7026
4-METHYL-4-PENTEN-2-OL	C6.H12.O	16	100	0.6901
4-METHYL-4-PENTEN-2-OL	C6.H12.O	278	100	0.6682
METHYLISOBUTYL KETONE	C6.H12.O	164	100	0.6614
2-METHYL-4-PENTEN-2-OL	C6.H12.O	167	100	0.6614
CYCLOHEXANOL-	C6.H12.O	280	100	0.6437
CYCLOHEXANOL	C6.H12.O	18	100	0.6202

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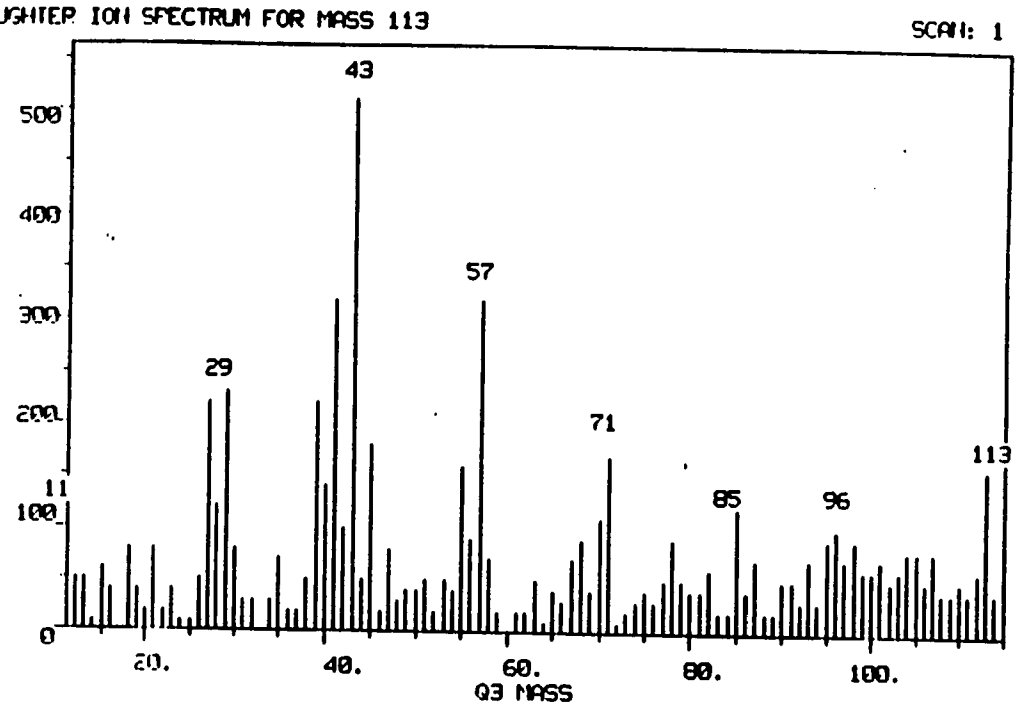
IRON HORSE PARK
ADMINISTRATIVE RECORD

DAUGHTER ION SPECTRUM FOR MASS 113

SCAN: 1



FILE: BIL031
HEADSPACE DOWN WIND OF B & M HOLDING POND 5-30-86

LIBRARY SEARCH RESULTS

LIBRARY FILE: IAGA6000

NAME	FORMULA	INDEX	M.W.	RESULT

IRO 003

2418

NOTICE: If the film image is less clear than this notice, it is due to the quality of the document being filmed

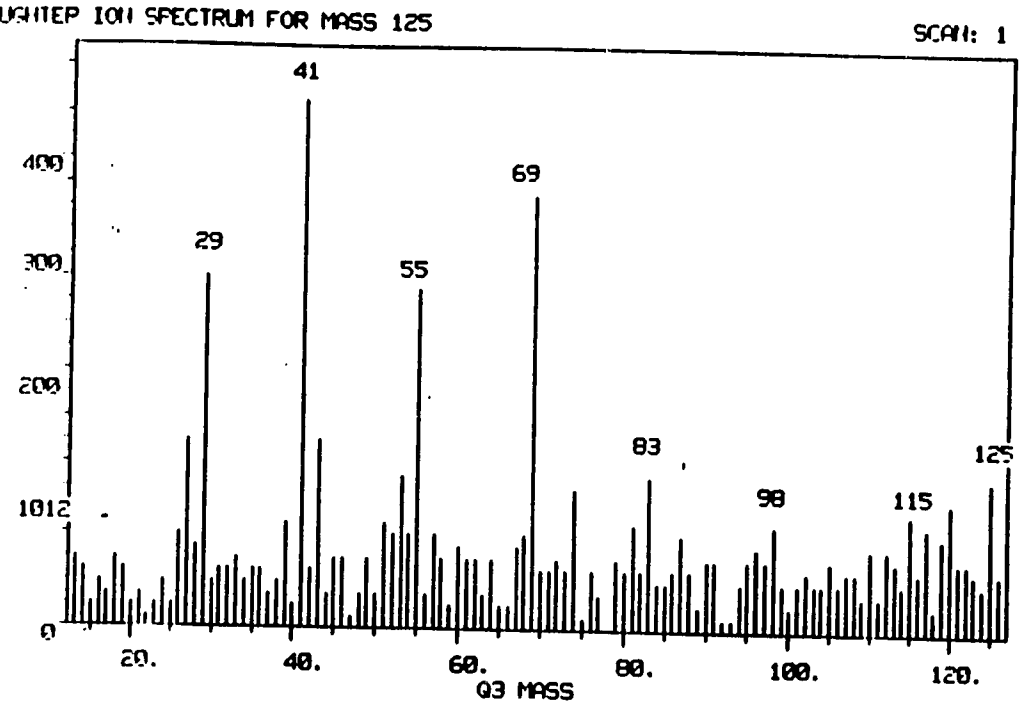
IRON HORSE PARK
ADMINISTRATIVE RECORD

IRO 003

2419

DAUGHTER ION SPECTRUM FOR MASS 125

SCAN: 1



FILE: BIL033
HEADSPACE DOWN WIND OF B & M HOLDING POND 5-30-86

LIBRARY SEARCH RESULTS

LIBRARY FILE: IAGA6000

NAME	FORMULA	INDEX	M.W.	RESULT

NOTICE: If the film image is less clear than this notice, it is due to the quality of the document being filmed

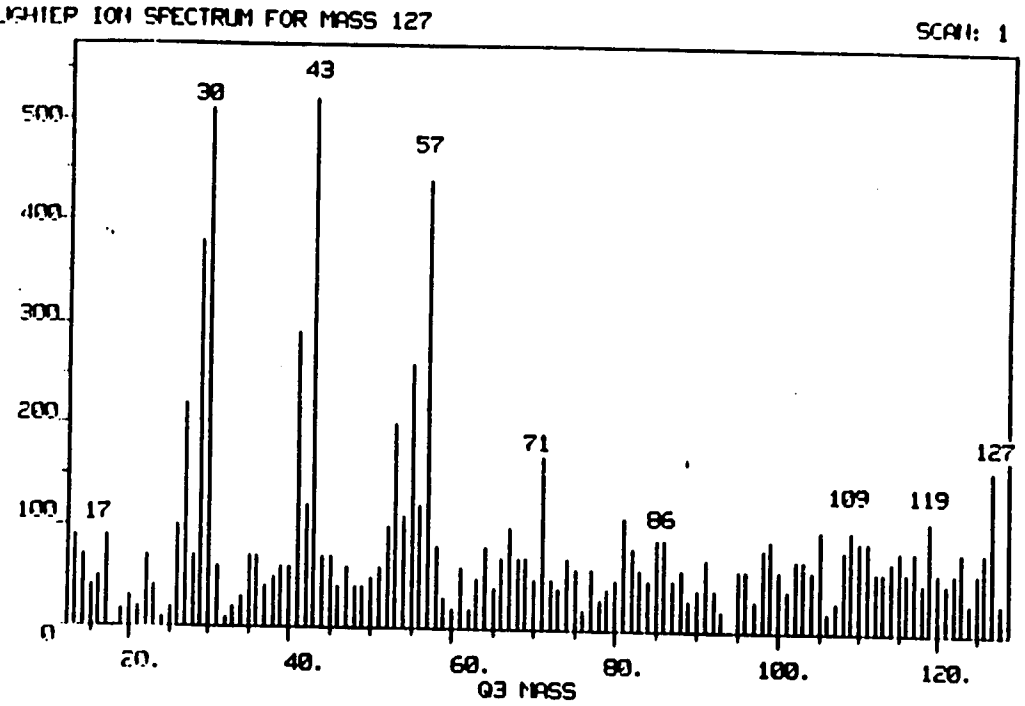
IRON HORSE PARK
ADMINISTRATIVE RECORD

IRO 003

2420

DAUGHTER ION SPECTRUM FOR MASS 127

SCAN: 1



FILE: RIL032
HEADSPACE DOWN WIND OF B & M HOLDING POND 5-30-86

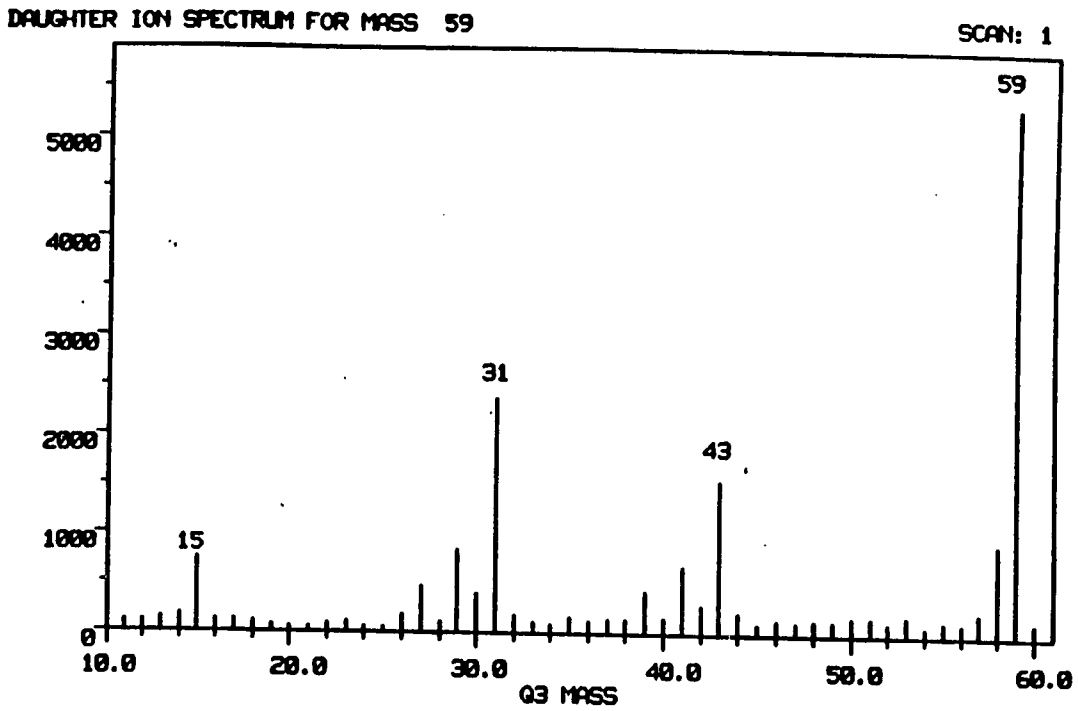
LIBRARY SEARCH RESULTS

LIBRARY FILE: IAGA6000

NAME	FORMULA	INDEX	M.W.	RESULT
M-FLUOROANISOLE	C7.H7.O.F	257	126	0.7206
O-FLUOROANISOLE	C7.H7.O.F	255	126	0.4114

NOTICE: If the film image is less clear than this notice, it is due to the quality of the document being filmed

IRON HORSE PARK
ADMINISTRATIVE RECORD



HAJJAR SCHOOL - 6/5/86

LIBRARY SEARCH RESULTS

LIBRARY FILE: TAGA6000

NAME	FORMULA	INDEX	M.W.	RESULT
PROPIONALDEHYDE	C3.H6.O	193	58	0.8264
ACETONE	C3.H6.O	189	58	0.8069
PROPYLENE OXIDE	C3H6O	53	58	0.8054
ACETONE	C3.H6.O	300	58	0.7884
PROPIONALDEHYDE	C3.H6.O	309	58	0.6583
ACETONE	C3.H6.O	87	58	0.5941
PROPIONALDEHYDE	C3.H6.O	91	58	0.3651

IRO 003

241

NOTICE: If the film image is less clear than this notice, it is due to the quality of the document being filmed

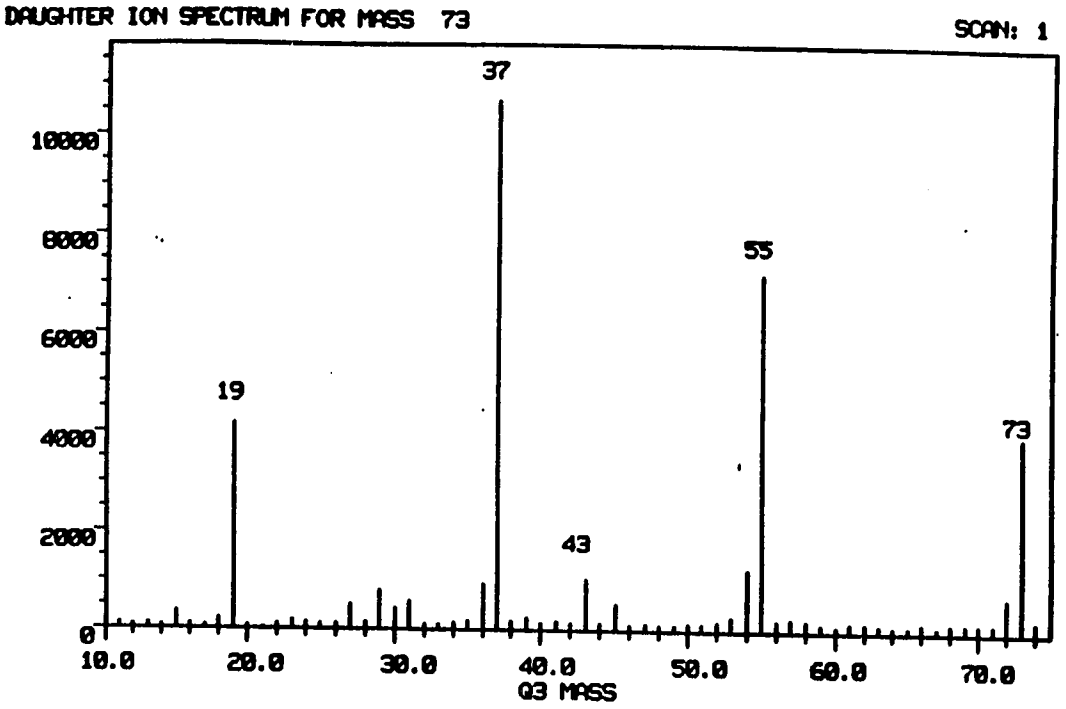
IRON HORSE PARK
ADMINISTRATIVE RECORD

IRO 003

2422

DAUGHTER ION SPECTRUM FOR MASS 73

SCAN: 1



HAJJAR SCHOOL - 6/5/86

LIBRARY SEARCH RESULTS

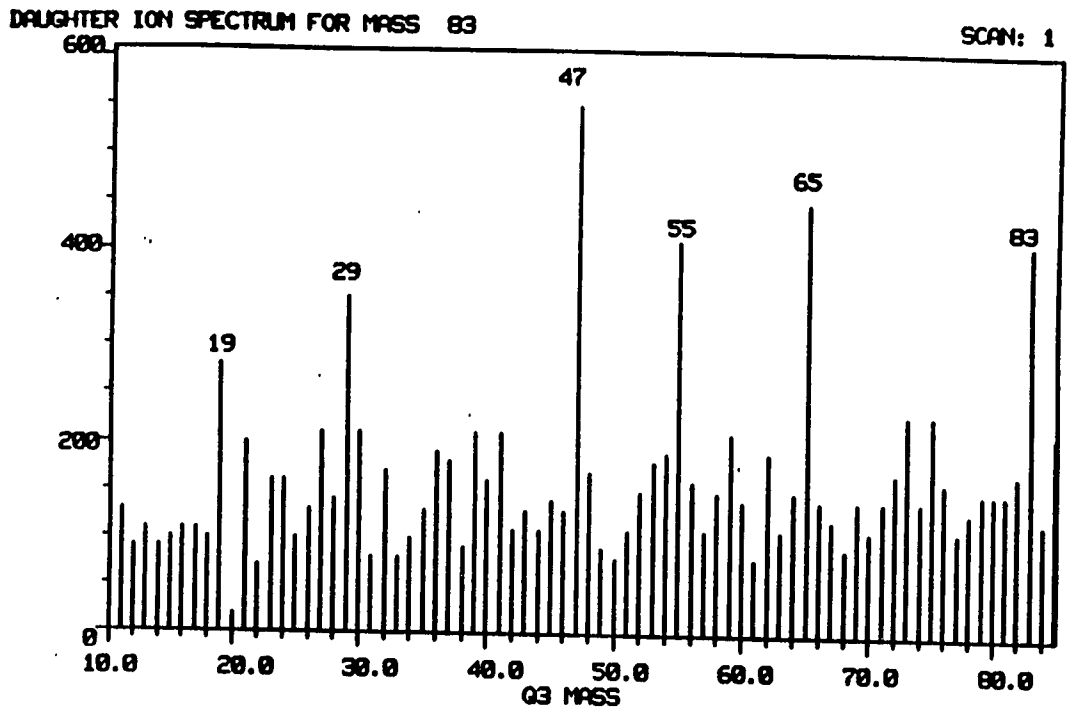
LIBRARY FILE: TAGA6000

NAME	FORMULA	INDEX	M.W.	RESULT
BUTYRALDEHYDE	C4.H8.O	86	72	0.7559
BUTRALDEHYDE	C4.H8.O	308	72	0.6906
BUTYRALDEHYDE	C4.H8.O	188	72	0.6325
CIS EPOXYBUTANE	C4.H8.O	355	72	0.6162
METHYL ETHYL KETONE	C4.H8.O	356	72	0.5953

NOTICE: If the film image is less clear than this notice, it is due to the quality of the document being filmed

IRON HORSE PARK
ADMINISTRATIVE RECORD

IRO 003



HAJJAR SCHOOL - 6/5/86

LIBRARY SEARCH RESULTS

LIBRARY FILE: TAGA6000

NAME	FORMULA	INDEX	M.W.	RESULT
METHYLENE CHLORIDE	CH2CL2	55	84	0.4472

243

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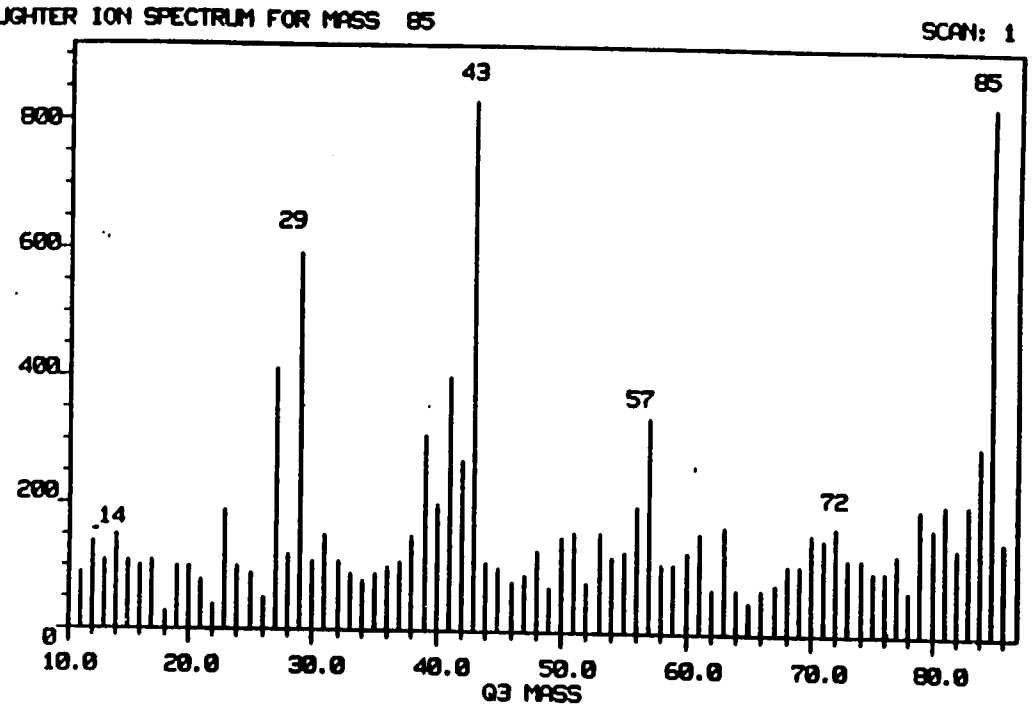
IRON HORSE PARK
ADMINISTRATIVE RECORD

IRO 003

2424

DAUGHTER ION SPECTRUM FOR MASS 85

SCAN: 1



HAJJAR SCHOOL - 6/5/86

LIBRARY SEARCH RESULTS

LIBRARY FILE: TAGA6000

NAME	FORMULA	INDEX	M.W.	RESULT
CHLOROFORM (85)	CHCL3	77	118	0.3841

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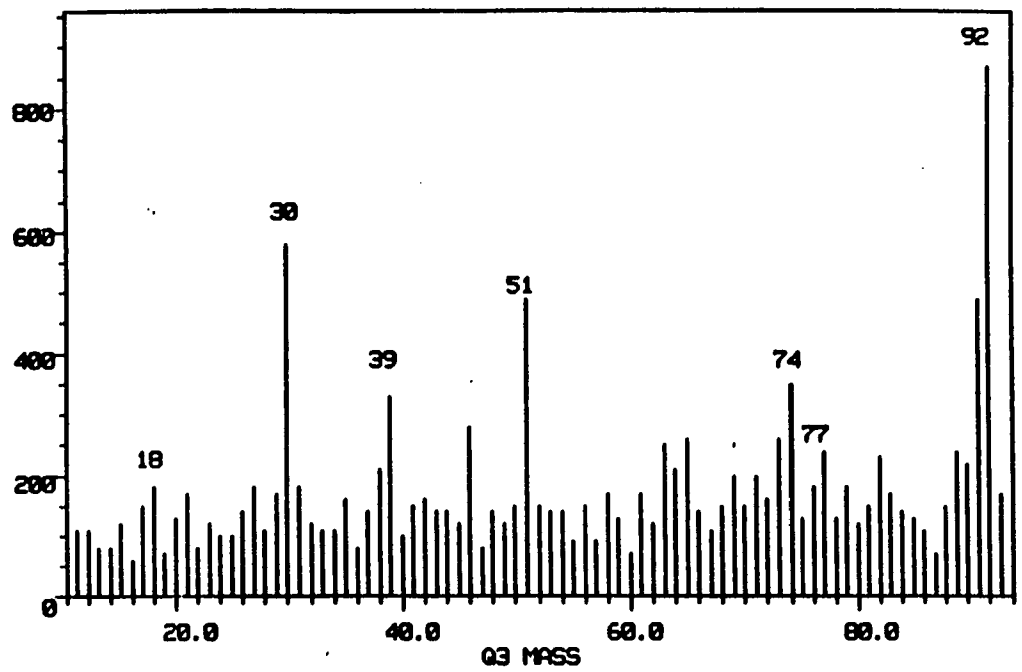
IRON HORSE PARK
ADMINISTRATIVE RECORD

IRO 003

2425

DAUGHTER ION SPECTRUM FOR MASS 92 SCAN: 1



HAJJAR SCHOOL - 6/5/86

LIBRARY SEARCH RESULTS

LIBRARY FILE: TAGA6000

NAME	FORMULA	INDEX	M.W.	RESULT
M/Z=92 FROM UFFI	?	151	0	0.8498
TOLUENE	C7.H8	312	92	0.7442
TOLUENE	C7H8	37	92	0.6402

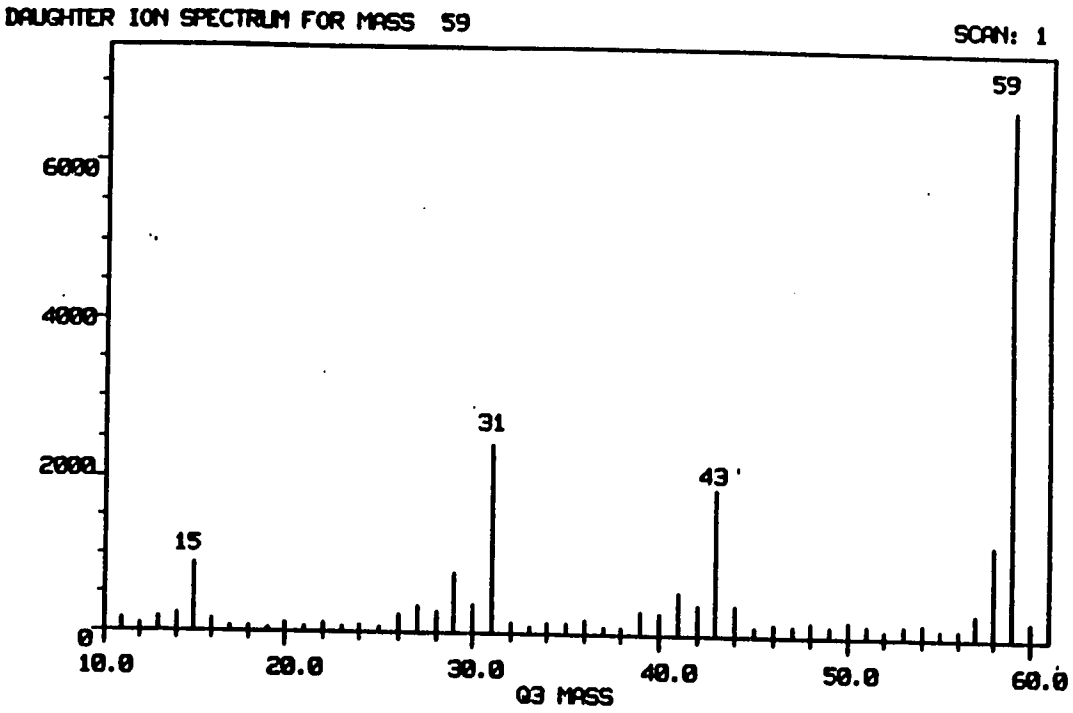
NOTICE: If the film image is less clear than this notice, it is due to the quality of the document being filmed

IRON HORSE PARK
ADMINISTRATIVE RECORD

IRO 003

2426

DAUGHTER ION SPECTRUM FOR MASS 59



DOWNWIND OF PENN CULVERT CO IN B&M PARKING LOT 6/5/86

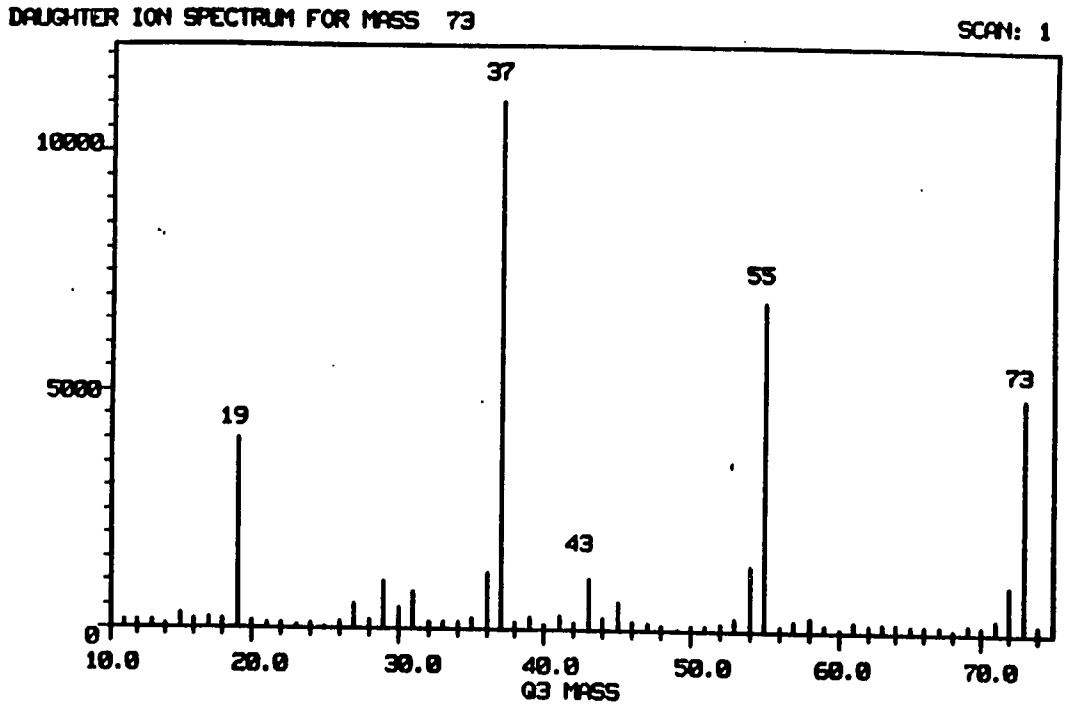
LIBRARY SEARCH RESULTS

LIBRARY FILE: TAGA6000

NAME	FORMULA	INDEX	M.W.	RESULT
ACETONE	C3.H6.O	300	58	0.8054
PROPYLENE OXIDE	C3H6O	53	58	0.7711
ACETONE	C3.H6.O	189	58	0.7625
PROPIONALDEHYDE	C3.H6.O	193	58	0.7490
PROPIONALDEHYDE	C3.H6.O	309	58	0.6325
ACETONE	C3.H6.O	87	58	0.5423
PROPIONALDEHYDE	C3.H6.O	91	58	0.2582

NOTICE: If the film image is less clear than this notice, it is due to the quality of the document being filmed

IRON HORSE PARK
ADMINISTRATIVE RECORD



DOWNWIND OF PENN CULVERT CO IN B&M PARKING LOT 6/5/86

LIBRARY SEARCH RESULTS

LIBRARY FILE: TAGA6000

NAME	FORMULA	INDEX	M.W.	RESULT
BUTYRALDEHYDE	C4.H8.O	86	72	0.7559
BUTRALDEHYDE	C4.H8.O	308	72	0.6794
BUTYRALDEHYDE	C4.H8.O	188	72	0.6325
CIS EPOXYBUTANE	C4.H8.O	355	72	0.6162
METHYL ETHYL KETONE	C4.H8.O	356	72	0.5953

IRO 003
2447

NOTICE: If the film image is less clear than this notice, it is due to the quality of the document being filmed

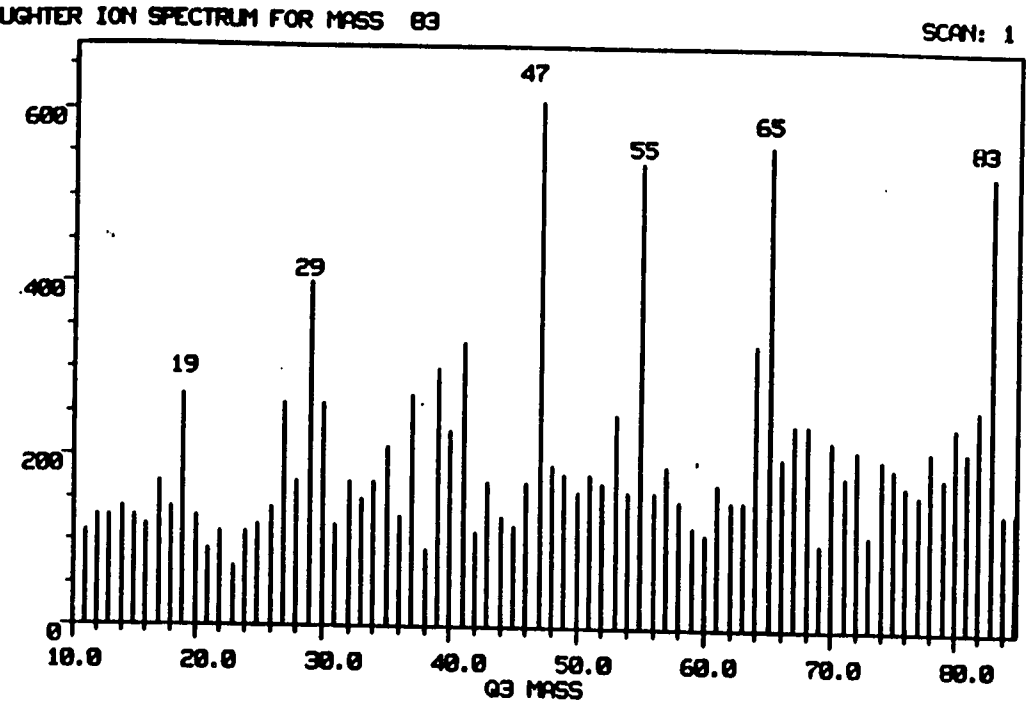
IRON HORSE PARK
ADMINISTRATIVE RECORD

IRO 003

242

DAUGHTER ION SPECTRUM FOR MASS 83

SCAN: 1



DOWNWIND OF PENN CULVERT CO IN B&M PARKING LOT 6/5/86

LIBRARY SEARCH RESULTS

LIBRARY FILE: TAGA6000

NAME	FORMULA	INDEX	M.W.	RESULT
METHYLENE CHLORIDE	CH2CL2	55	84	0.3651

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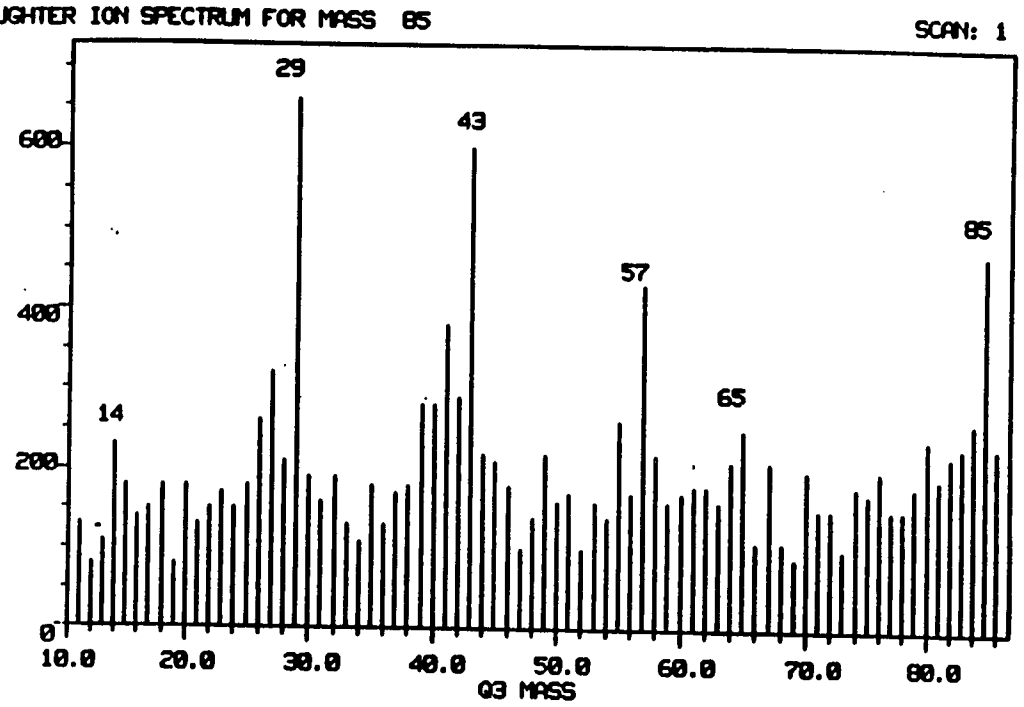
IRON HORSE PARK
ADMINISTRATIVE RECORD

IRO 003

2420

DAUGHTER ION SPECTRUM FOR MASS 85

SCAN: 1



DOWNWIND OF PENN CULVERT CO IN B&M PARKING LOT 6/5/86

LIBRARY SEARCH RESULTS

LIBRARY FILE: TAGA6000

NAME	FORMULA	INDEX	M.W.	RESULT

NOTICE: If the film image is less clear than this notice, it is due to the quality of the document being filmed

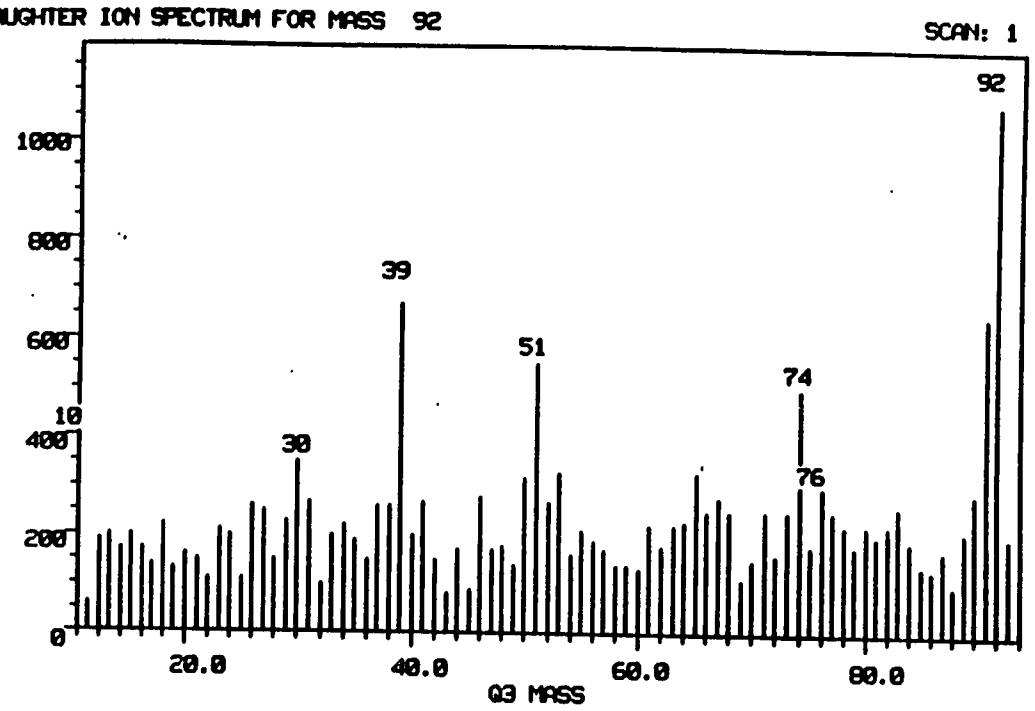
IRON HORSE PARK
ADMINISTRATIVE RECORD

IRO 003

E430

DAUGHTER ION SPECTRUM FOR MASS 92

SCAN: 1



DOWNWIND OF PENN CULVERT CO IN B&M PARKING LOT 6/5/86

LIBRARY SEARCH RESULTS

LIBRARY FILE: TAGA6000

NAME	FORMULA	INDEX	M.W.	RESULT
M/Z=92 FROM UFFI	?	151	0	0.8165
TOLUENE	C7.H8	312	92	0.6563
TOLUENE	C7H8	37	92	0.5867

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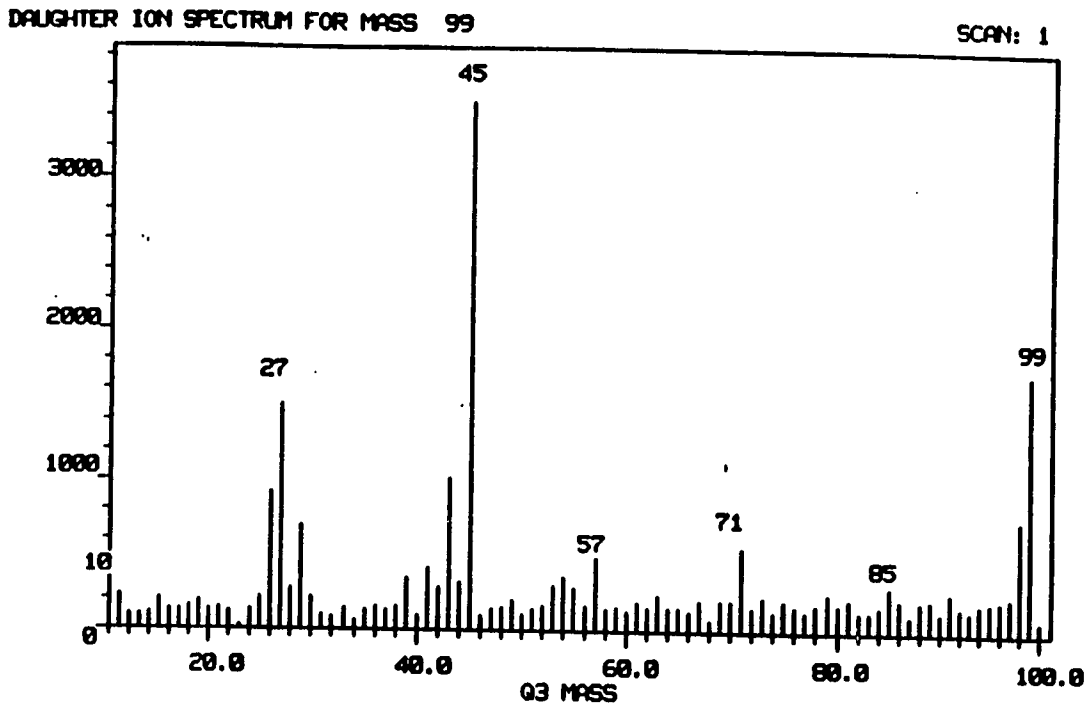
IRON HORSE PARK
ADMINISTRATIVE RECORD



DOWNWIND OF PENN CULVERT CO IN B&M PARKING LOT 6/5/86

LIBRARY SEARCH RESULTS

LIBRARY FILE: TAGA6000

NAME	FORMULA	INDEX	M.W.	RESULT
METHYLCHLOROFORM	C2H3CL3	60	132	0.7268
VINYLIDENE CHLORIDE	C2H3CL2	62	96	0.6794
CYCLOHEXANONE	C6.H10.O	301	98	0.4690
ETHYLENE DICHLORIDE	C2H4CL2	49	98	0.3592

IRO 003

E4E1

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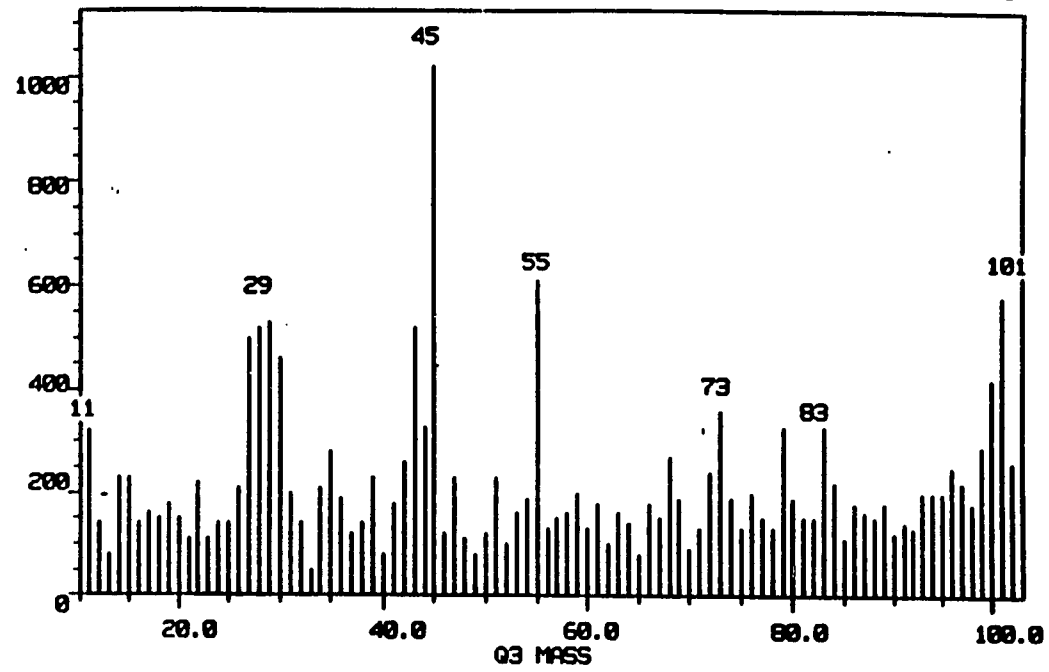
IRON HORSE PARK
ADMINISTRATIVE RECORD

IRO 003

242

DAUGHTER ION SPECTRUM FOR MASS 101 SCAN: 1



DOWNWIND OF PEIN CULVERT CO IN B&M PARKING LOT 6/5/86

LIBRARY SEARCH RESULTS

LIBRARY FILE: TAGA6000

NAME	FORMULA	INDEX	M.W.	RESULT
METHYLISOBUTYL KETONE	C6.H12.O	164	100	0.6455
2-METHYL-4-PENTEN-2-OL	C6.H12.O	167	100	0.6455
2-METHYL-4-PENTEN-2-OL	C6.H12.O	15	100	0.5948
3-METHYL-1-VALERALDEHYDE	C6.H12.O	292	100	0.5603
2-METHYL-4-PENTEN-2-OL	C6.H12.O	277	100	0.5501
3-METHYL-1-VALERALDEHYDE	C6.H12.O	21	100	0.4639
CYCLOHEXANOL	C6.H12.O	94	100	0.4588
3-METHYL-1-VALERALDEHYDE	C6.H12.O	173	100	0.4571
5-HEXEN-3-OL	C6.H12.O	171	100	0.4510
4-METHYL-4-PENTEN-2-OL	C6.H12.O	16	100	0.4364

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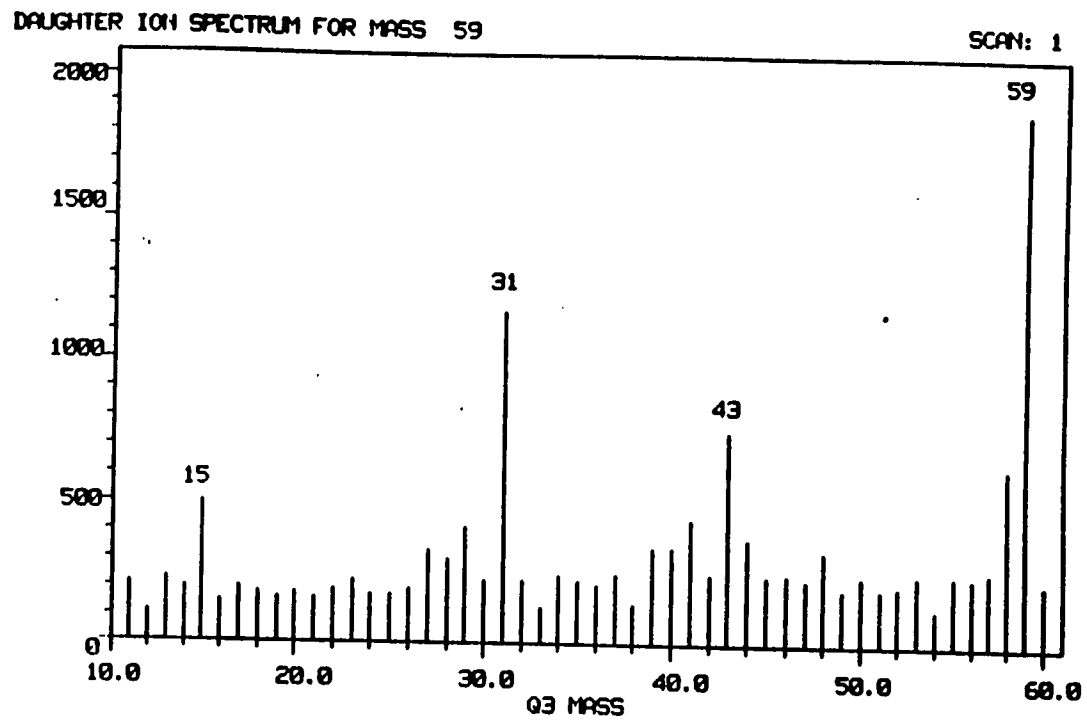
IRON HORSE PARK
ADMINISTRATIVE RECORD

IRO 003



STATIONARY MONITORING ON GRAY STREET DOWNWIND OF LANDFILL 6/5/86

LIBRARY SEARCH RESULTS

LIBRARY FILE: TAGA6000

NAME	FORMULA	INDEX	M.W.	RESULT
PROPIONALDEHYDE	C3.H6.O	193	58	0.6984
ACETONE	C3.H6.O	300	58	0.6975
PROPYLENE OXIDE	C3H6O	53	58	0.6367
ACETONE	C3.H6.O	189	58	0.6288
PROPIONALDEHYDE	C3.H6.O	309	58	0.5164
ACETONE	C3.H6.O	87	58	0.3430

2433

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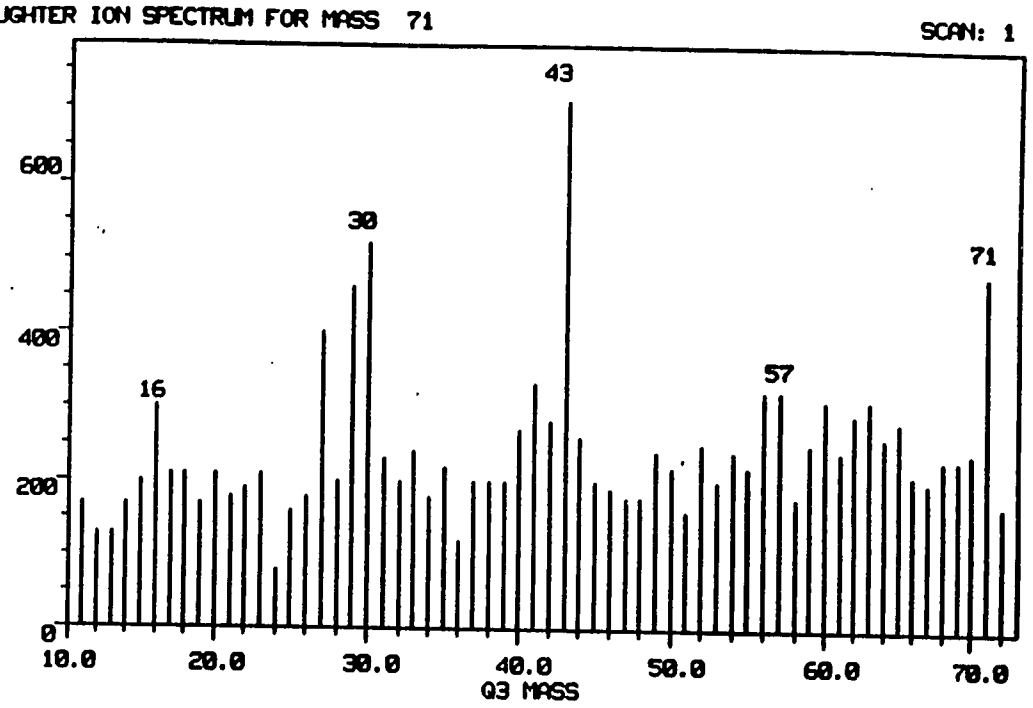
IRON HORSE PARK
ADMINISTRATIVE RECORD

IRO 003

444

DAUGHTER ION SPECTRUM FOR MASS 71

SCAN: 1



STATIONARY MONITORING ON GRAY STREET DOWNWIND OF LANDFILL 6/5/86

LIBRARY SEARCH RESULTS

LIBRARY FILE: TAGA6000

NAME	FORMULA	INDEX	M.W.	RESULT

NOTICE: If the film image is less clear than this notice, it is due to the quality of the document being filmed

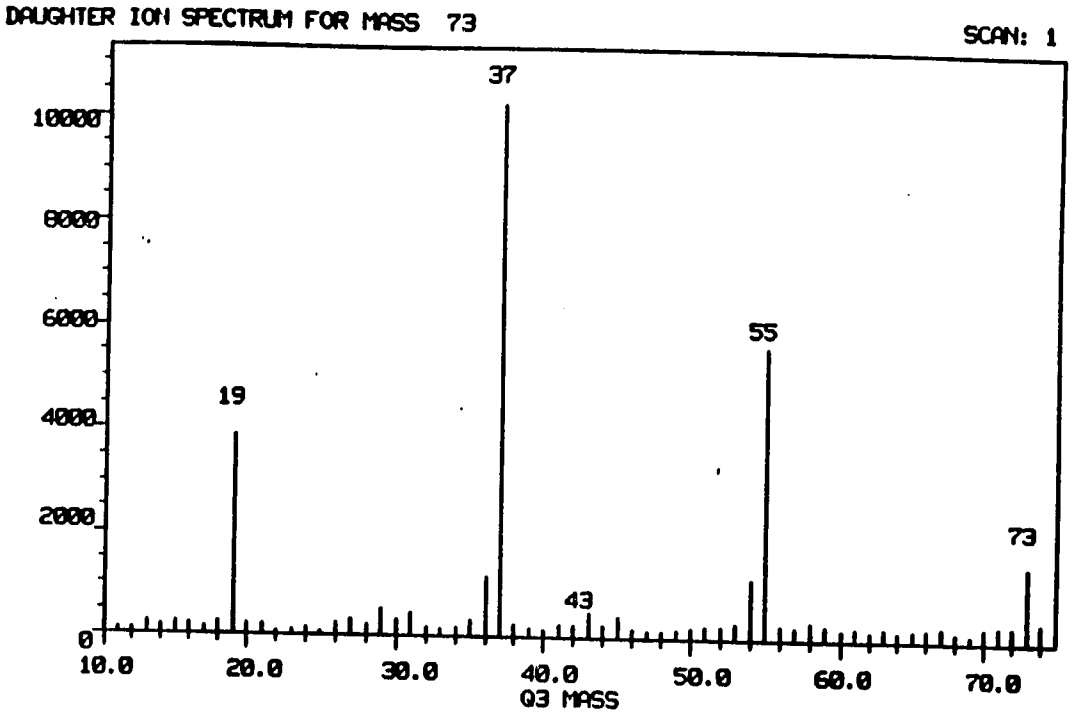
IRON HORSE PARK
ADMINISTRATIVE RECORD

IRO 003

2445

DAUGHTER ION SPECTRUM FOR MASS 73

SCAN: 1



STATIONARY MONITORING ON GRAY STREET DOWNWIND OF LANDFILL 6/5/86

LIBRARY SEARCH RESULTS

LIBRARY FILE: TAGA6000

NAME	FORMULA	INDEX	M.W.	RESULT
BUTYRALDEHYDE	C4.H8.O	86	72	0.6901
BUTRALDEHYDE	C4.H8.O	308	72	0.6445
BUTYRALDEHYDE	C4.H8.O	188	72	0.6179
CIS EPOXYBUTANE	C4.H8.O	355	72	0.5953
METHYL ETHYL KETONE	C4.H8.O	356	72	0.5737

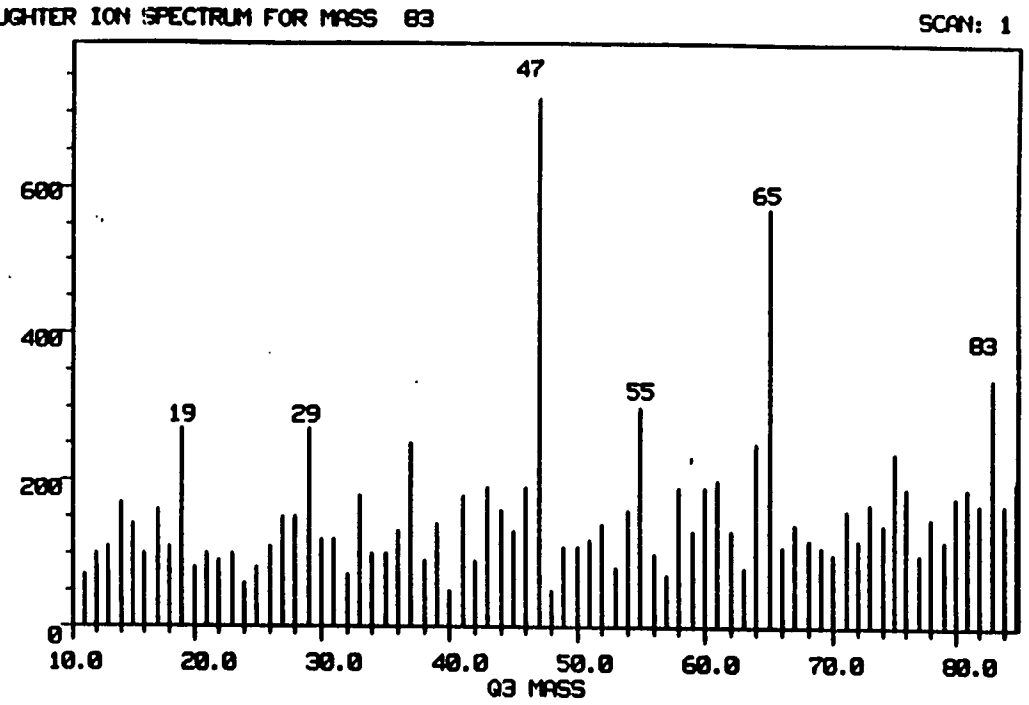
NOTICE: If the film image is less clear than this notice, it is due to the quality of the document being filmed

IRON HORSE PARK
ADMINISTRATIVE RECORD

IRO 003

2484

DAUGHTER ION SPECTRUM FOR MASS 83 SCAN: 1



STATIONARY MONITORING ON GRAY STREET DOWNWIND OF LANDFILL 6/5/86

LIBRARY SEARCH RESULTS

LIBRARY FILE: TAGA6000

NAME	FORMULA	INDEX	M.W.	RESULT
METHYLENE CHLORIDE	CH2CL2	55	84	0.2582

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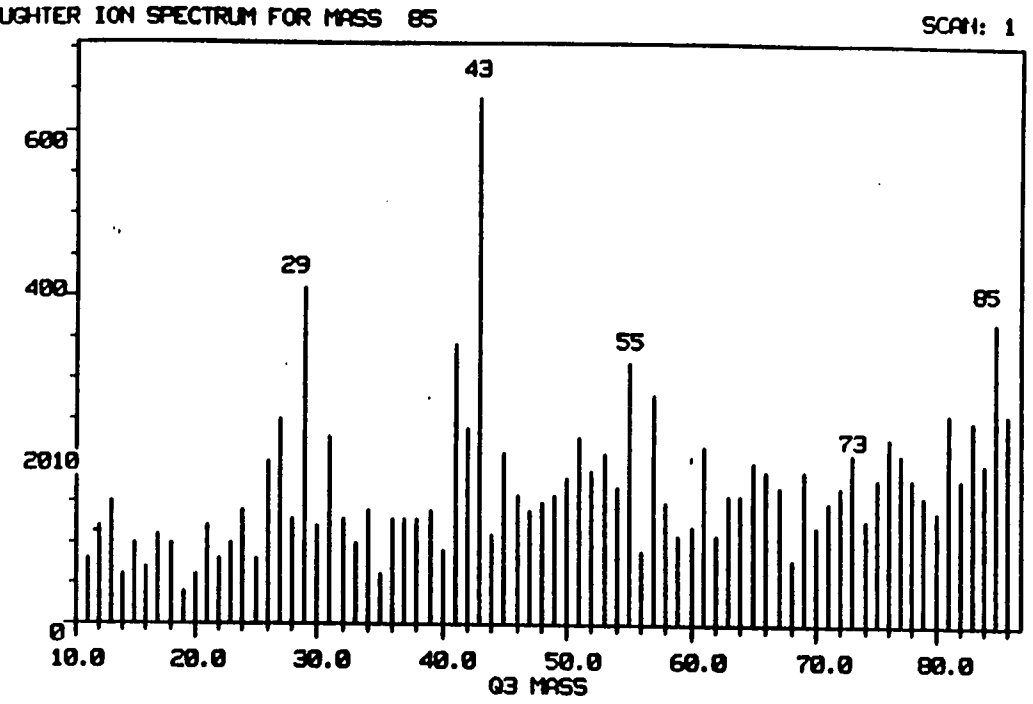
IRON HORSE PARK
ADMINISTRATIVE RECORD

IRO 003

2447

DAUGHTER ION SPECTRUM FOR MASS 85

SCAN: 1



STATIONARY MONITORING ON GRAY STREET DOWNWIND OF LANDFILL 6/5/86

LIBRARY SEARCH RESULTS

LIBRARY FILE: TAGA6000

NAME	FORMULA	INDEX	M.W.	RESULT
CHLOROFORM (85)	CHCL3	77	118	0.2863

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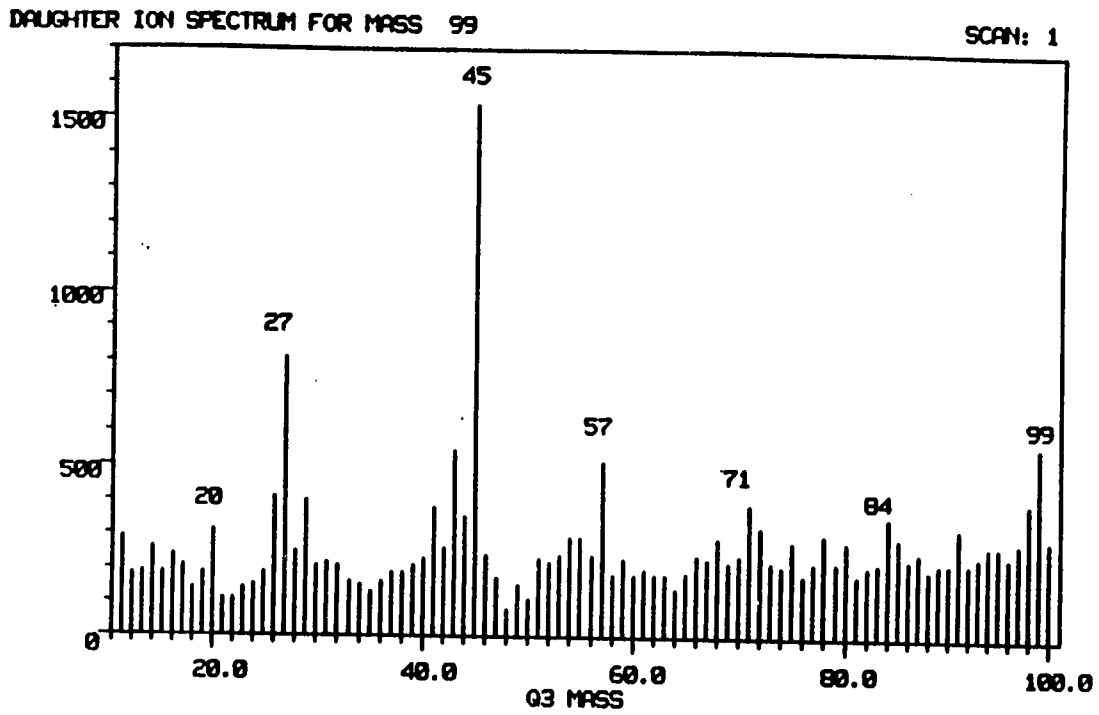
IRON HORSE PARK
ADMINISTRATIVE RECORD

IRO 003

0242



STATIONARY MONITORING ON GRAY STREET DOWNWIND OF LANDFILL 6/5/86

LIBRARY SEARCH RESULTS

LIBRARY FILE: TAGA6000

NAME	FORMULA	INDEX	M.W.	RESULT
VINYLIDENE CHLORIDE	C2H3CL2	62	96	0.6794
METHYLCHLOROFORM	C2H3CL3	60	132	0.6588
CYCLOHEXANONE	C6.H10.O	301	98	0.3742

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IRON HORSE PARK
ADMINISTRATIVE RECORD

IRO 003

2449

APPENDIX C

CONFIRMING DAUGHTER SPECTRA

AT SCHAFFER LANDFILL

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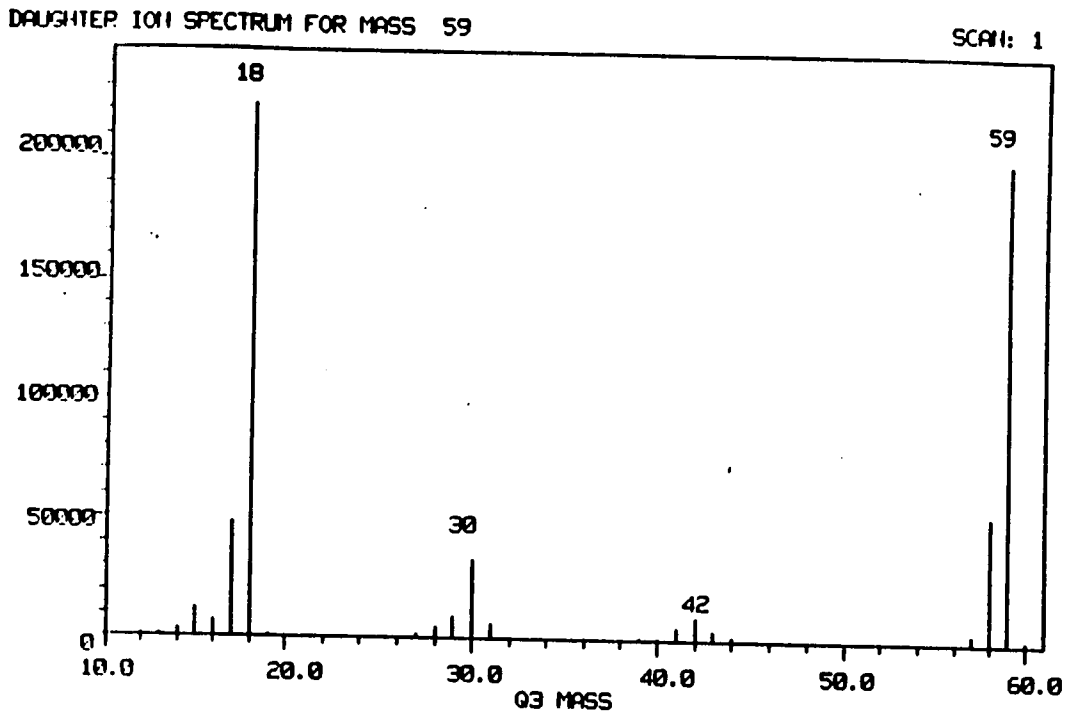
IRON HORSE PARK
ADMINISTRATIVE RECORD



SCHAEFFER LANDFILL BAG SAMPLE (NEAT) - 5/30/86

LIBRARY SEARCH RESULTS

LIBRARY FILE: TAGA6000

NAME	FORMULA	INDEX	M.W.	RESULT
PROPIONALDEHYDE	C3.H6.O	193	58	0.5410
PROPIONALDEHYDE	C3.H6.O	91	58	0.5164
ACETONE	C3.H6.O	87	58	0.4851
ACETONE	C3.H6.O	189	58	0.4575
PROPIONALDEHYDE	C3.H6.O	309	58	0.4472
PROPYLENE OXIDE	C3H6O	53	58	0.4350
ACETONE	C3.H6.O	300	58	0.4027

IRO 003

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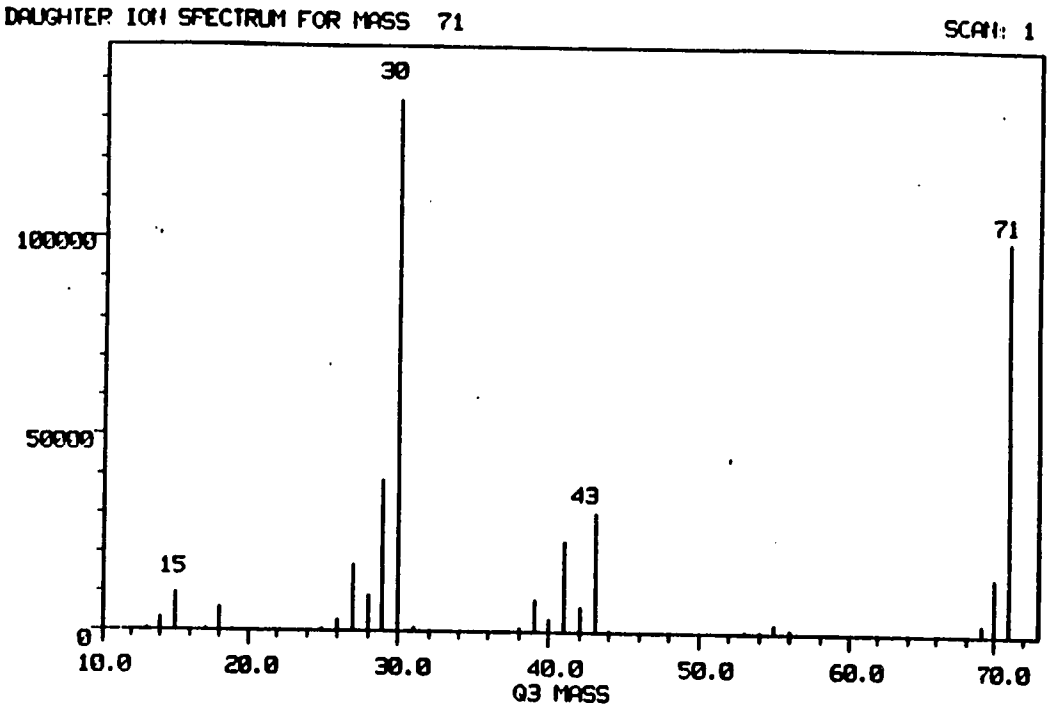
IRON HORSE PARK
ADMINISTRATIVE RECORD

IRO 003

244

DAUGHTER ION SPECTRUM FOR MASS 71

SCAN: 1



SCHAEFFER LANDFILL BAG SAMPLE (NEAT) - 5/30/86

LIBRARY SEARCH RESULTS

LIBRARY FILE: TAGA6000

NAME	FORMULA	INDEX	M.W.	RESULT

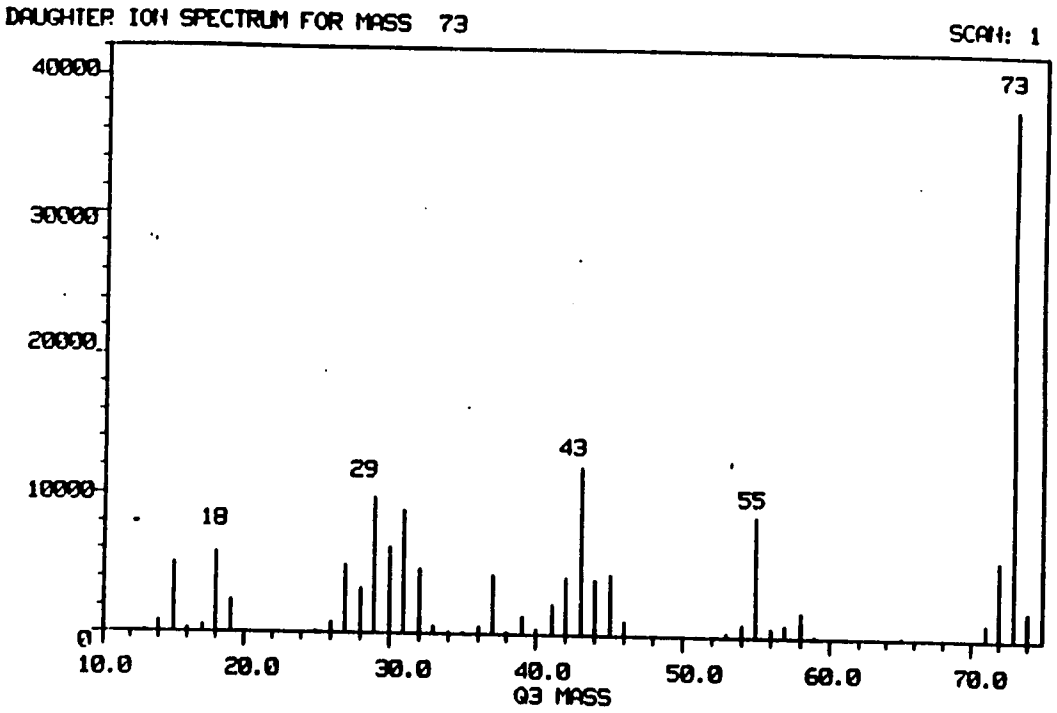
NOTICE: If the film image is less clear than this notice, it is due to the quality of the document being filmed

IRON HORSE PARK
ADMINISTRATIVE RECORD

IRO 003

244

DAUGHTER ION SPECTRUM FOR MASS 73



SCHAEFFER LANDFILL BAG SAMPLE (NEAT) - 5/30/86

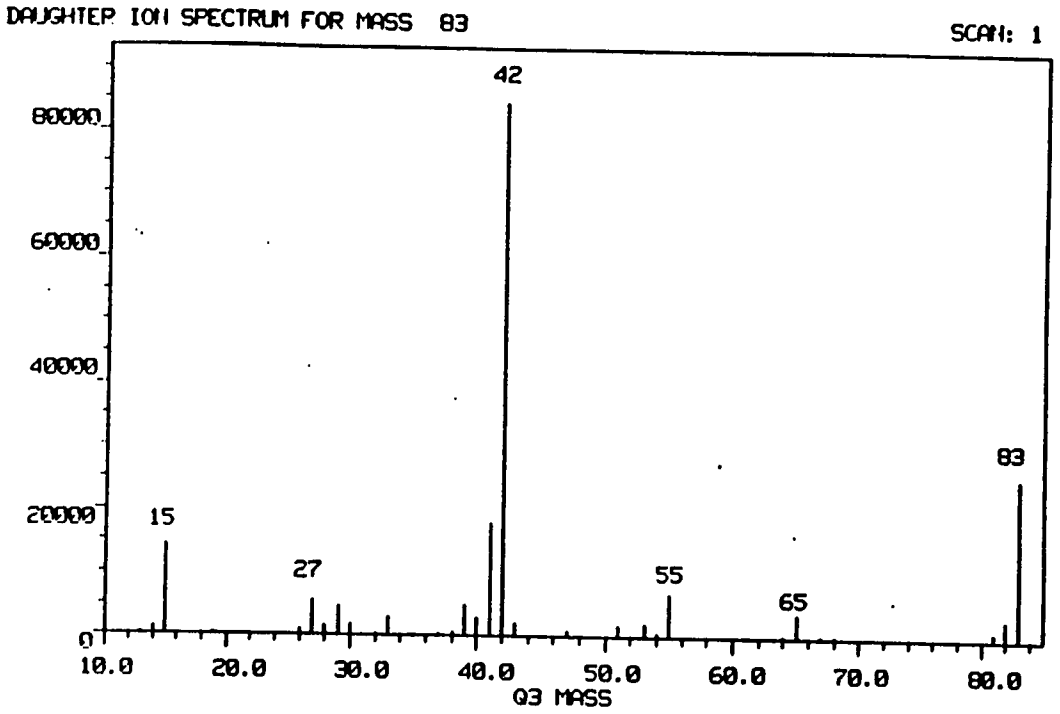
LIBRARY SEARCH RESULTS

LIBRARY FILE: TAGA6000

NAME	FORMULA	INDEX	M.W.	RESULT
CIS EPOXYBUTANE	C4.H8.O	355	72	0.8419
METHYL ETHYL KETONE	C4.H8.O	356	72	0.8268
BUTYRALDEHYDE	C4.H8.O	308	72	0.7646
BUTYRALDEHYDE	C4.H8.O	188	72	0.6742
BUTYRALDEHYDE	C4.H8.O	86	72	0.3780

NOTICE: If the film image is less clear than this notice, it is due to the quality of the document being filmed

IRON HORSE PARK
ADMINISTRATIVE RECORD



SCHAEFFER LANDFILL BAG SAMPLE (NEAT) - 5/30/86

LIBRARY SEARCH RESULTS

LIBRARY FILE: TAGA6000

NAME	FORMULA	INDEX	M.W.	RESULT
ACRYLONITRILE*	C3H3N	74	53	0.3015
METHYLENE CHLORIDE	CH2CL2	55	84	0.2582
CHLOROFORM (83)	CHCL3	78	118	0.2000

IRO 003

244

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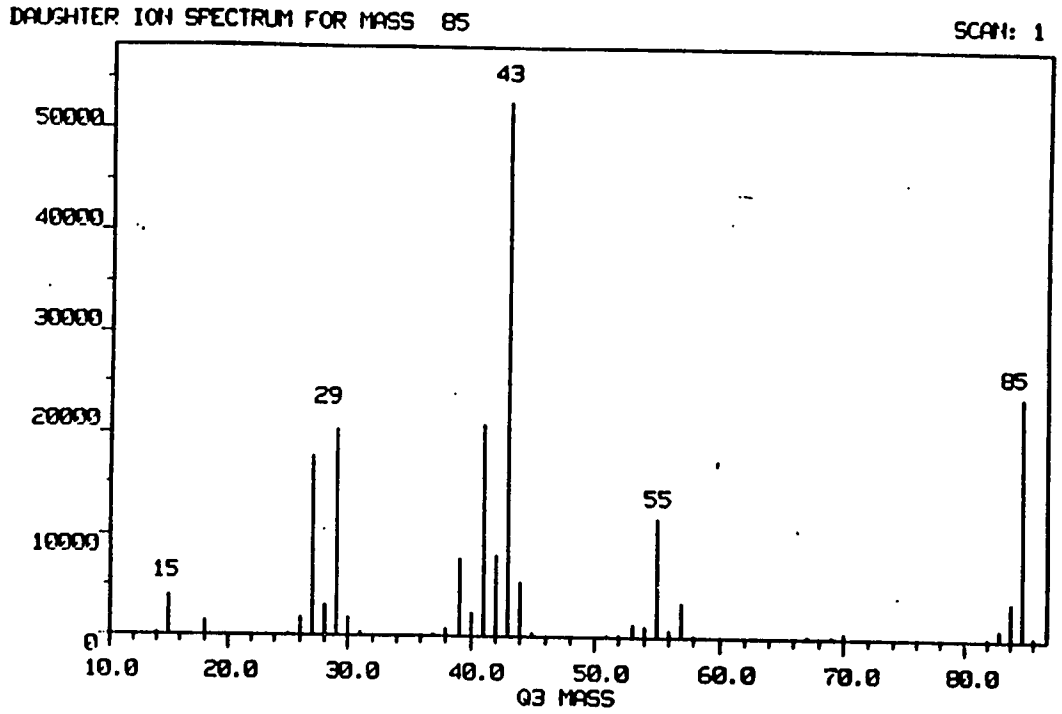
IRON HORSE PARK
ADMINISTRATIVE RECORD



SCHAEFFER LANDFILL BAG SAMPLE (NEAT) - 5/30/86

LIBRARY SEARCH RESULTS

LIBRARY FILE: TAGA6000

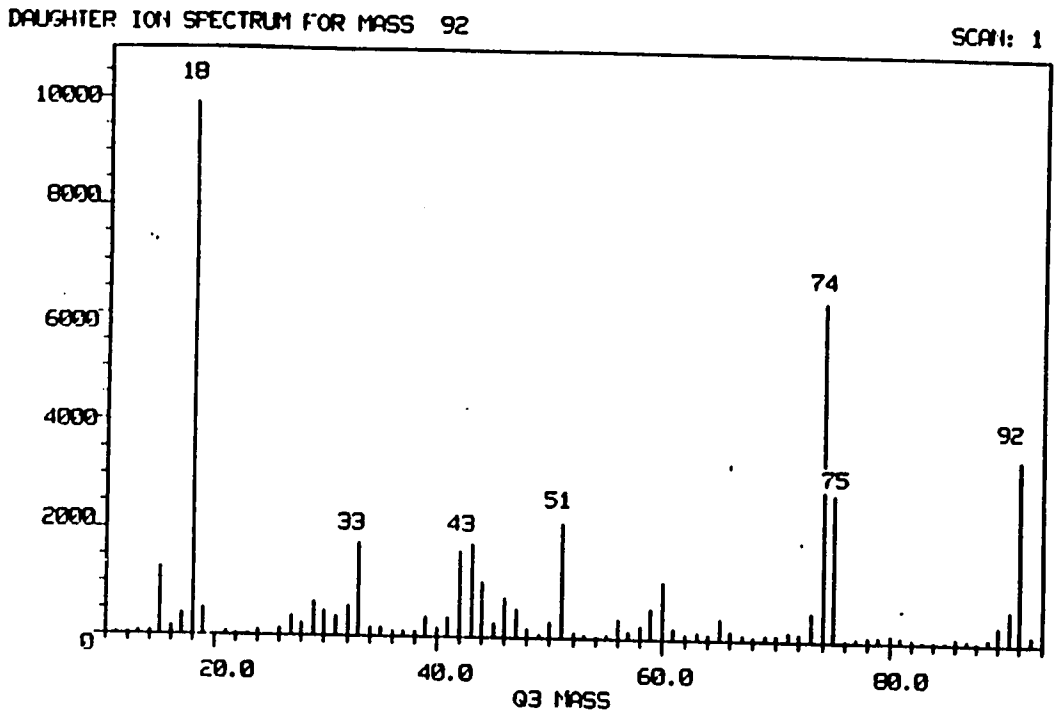
NAME	FORMULA	INDEX	M.W.	RESULT
CHLOROFORM (85)	CHCL3	77	118	0.4959

IRO 003

244

NOTICE: If the film image is less clear than this notice, it is due to the quality of the document being filmed

IRON HORSE PARK
ADMINISTRATIVE RECORD



SCHAEFFER LANDFILL BAG SAMPLE (NEAT) - 5/30/86

LIBRARY SEARCH RESULTS

LIBRARY FILE: TAGA6000

NAME	FORMULA	INDEX	M.W.	RESULT
TOLUENE	C7H8	37	92	0.5432
M/Z=92 FROM UFFI	?	151	0	0.5270
TOLUENE	C7.H8	312	92	0.5262

IRO 003

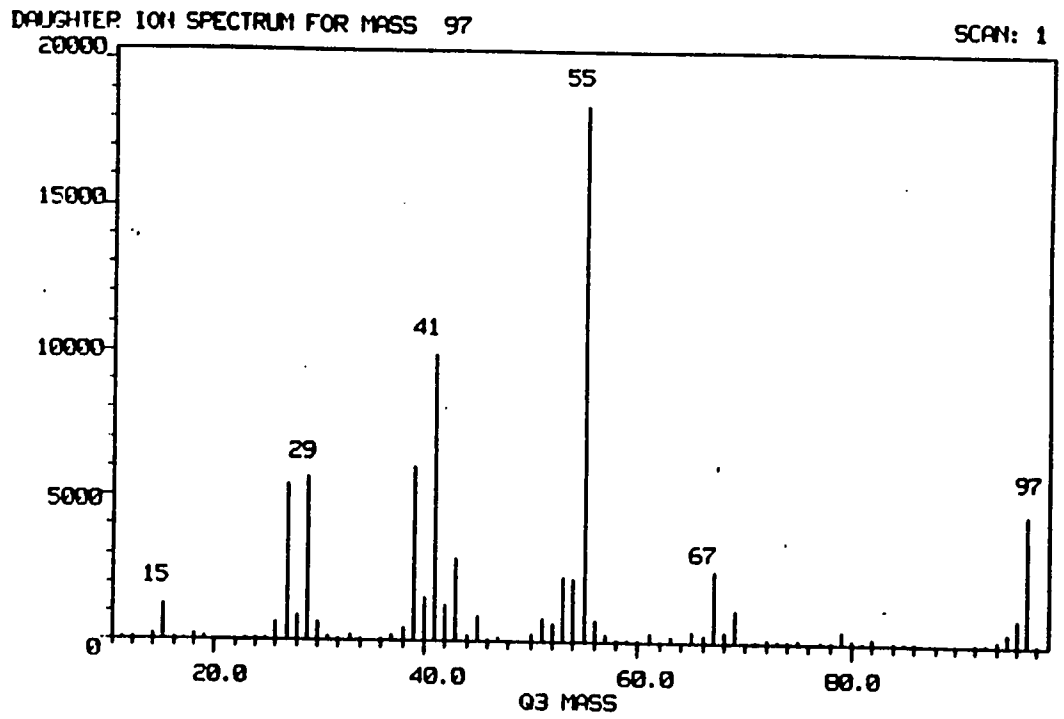
2445

NOTICE: If the film image is less clear than this notice, it is due to the quality of the document being filmed

IRON HORSE PARK
ADMINISTRATIVE RECORD

IRO 003

2440



SCHAEFFER LANDFILL BAG SAMPLE (NEAT) - 5/30/86

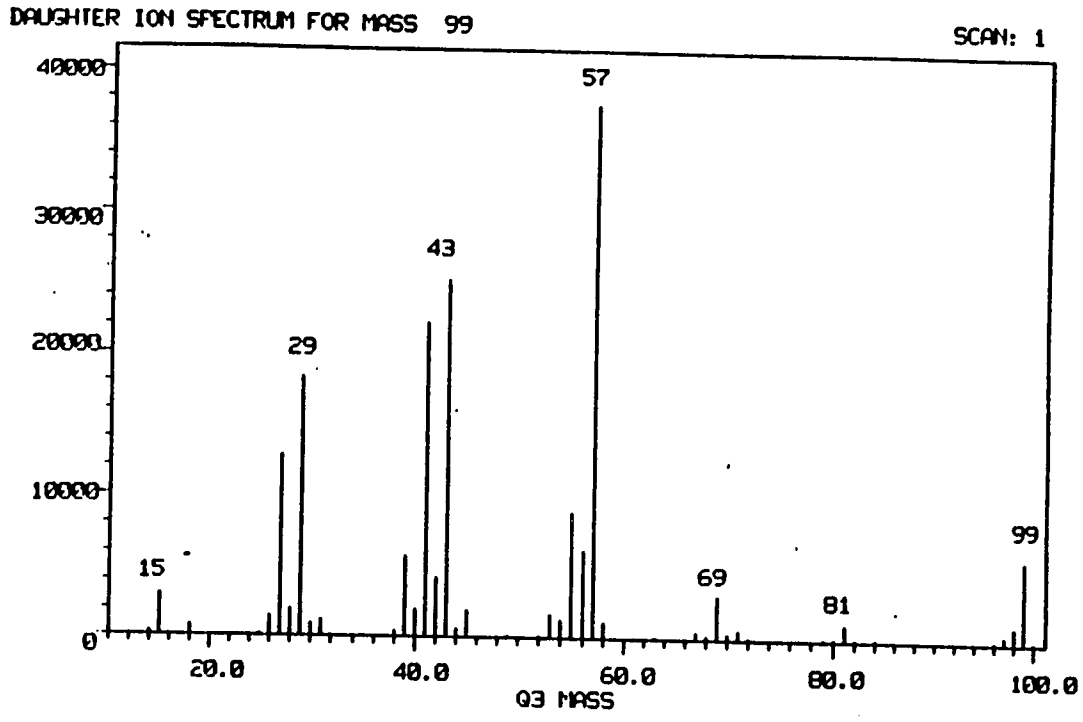
LIBRARY SEARCH RESULTS

LIBRARY FILE: TAGA6000

NAME	FORMULA	INDEX	M.W.	RESULT
M/Z=97 FROM UFFI	?	144	96	0.8718
FURFURAL	C5H4O2	131	96	0.5774
VINYLIDENE CHLORIDE	C2H3CL2	61	96	0.5443

NOTICE: If the film image is less clear than this notice, it is due to the quality of the document being filmed

IRON HORSE PARK
ADMINISTRATIVE RECORD



SCHAEFFER LANDFILL BAG SAMPLE (NEAT) - 5/30/86

LIBRARY SEARCH RESULTS

LIBRARY FILE: TAGA6000

NAME	FORMULA	INDEX	M.W.	RESULT
CYCLOHEXANONE	C6.H10.O	301	98	0.4690
VINYLIDENE CHLORIDE	C2H3CL2	62	96	0.3581

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ADMINISTRATIVE RECORD

IRO 003

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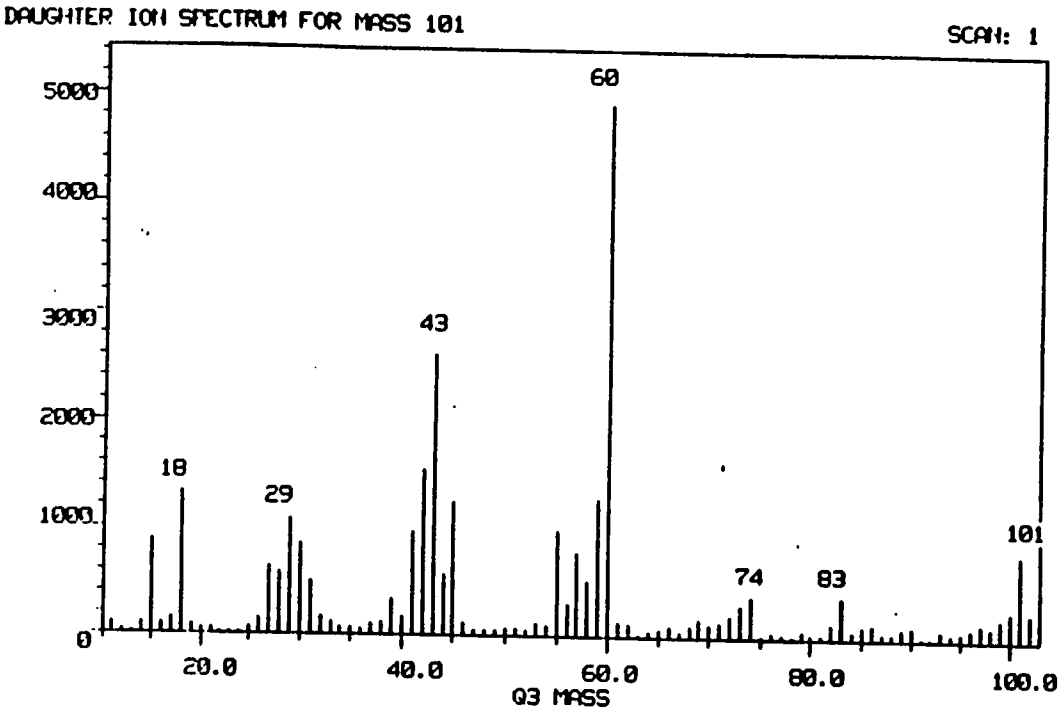
DAUGHTER ION SPECTRUM FOR MASS 101



SCHAEFFER LANDFILL BAG SAMPLE (NEAT) - 5/30/86

LIBRARY SEARCH RESULTS

LIBRARY FILE: TAGA6000

NAME	FORMULA	INDEX	M.W.	RESULT
2-METHYL-4-PENTEN-2-OL	C6.H12.O	15	100	0.8321
3-METHYL-1-VALERALDEHYDE	C6.H12.O	292	100	0.8283
2-METHYL-4-PENTEN-2-OL	C6.H12.O	167	100	0.8165
METHYLISOBUTYL KETONE	C6.H12.O	164	100	0.8165
2-METHYL-4-PENTEN-2-OL	C6.H12.O	277	100	0.8111
3-METHYL-1-VALERALDEHYDE	C6.H12.O	21	100	0.7631
METHYL ISOBUTYL KETONE	C6.H12.O	101	100	0.7223
CYCLOHEXANOL-	C6.H12.O	280	100	0.6969
3-METHYL-1-VALERALDEHYDE	C6.H12.O	173	100	0.6911
5-HEXEN-3-OL	C6.H12.O	171	100	0.6889

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ADMINISTRATIVE RECORD

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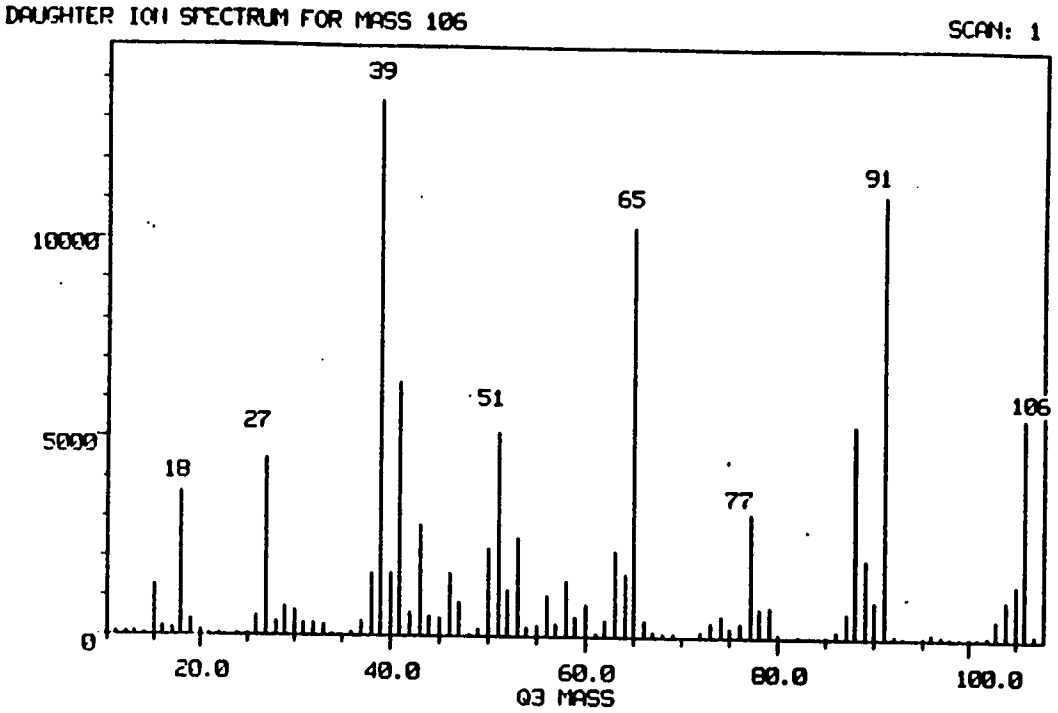
DAUGHTER ION SPECTRUM FOR MASS 106

SCAN: 1



SCHAEFFER LANDFILL BAG SAMPLE (NEAT) - 5/30/86

LIBRARY SEARCH RESULTS

LIBRARY FILE: TAGA6000

NAME	FORMULA	INDEX	M.W.	RESULT
O-XYLENE	C8H10	215	106	0.5345
P-XYLENE	C8H10	39	106	0.3974
XYLENE-O	C8.H10	328	106	0.2928

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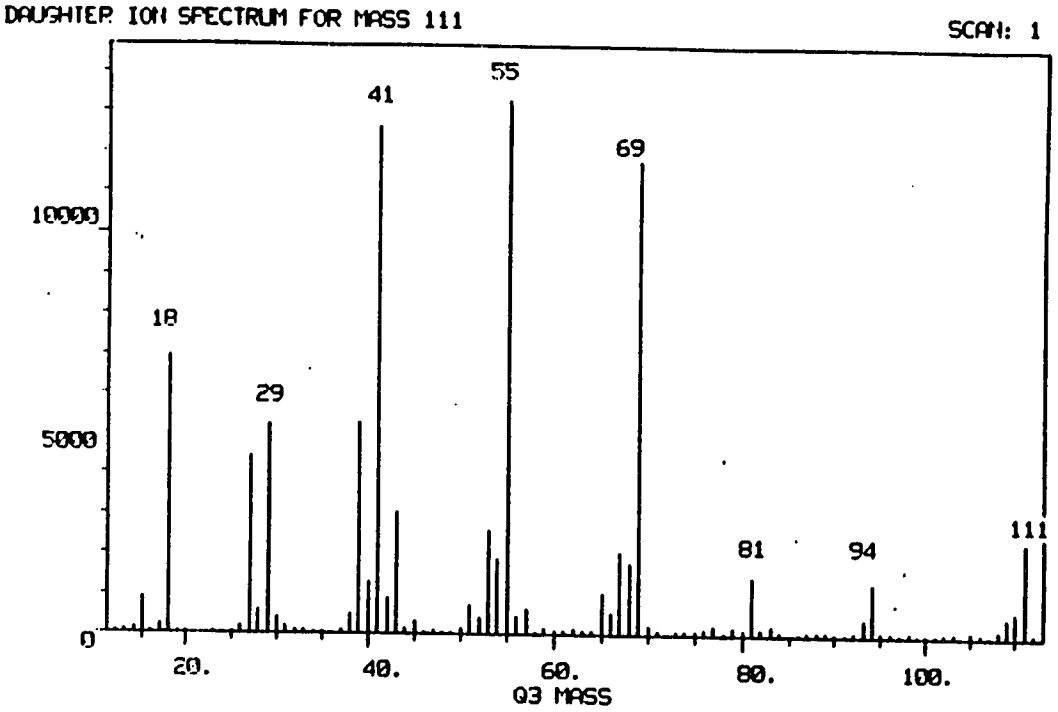
DAUGHTER ION SPECTRUM FOR MASS 111

SCAN: 1



SCHAEFFER LANDFILL BAG SAMPLE (NEAT) - 5/30/86

LIBRARY SEARCH RESULTS

LIBRARY FILE: TAGA6000

NAME	FORMULA	INDEX	M.W.	RESULT
HYDROQUINONE	C6H6O2	226	110	0.4543
HYDROQUINONE	C6H6O2	134	110	0.1890

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0542

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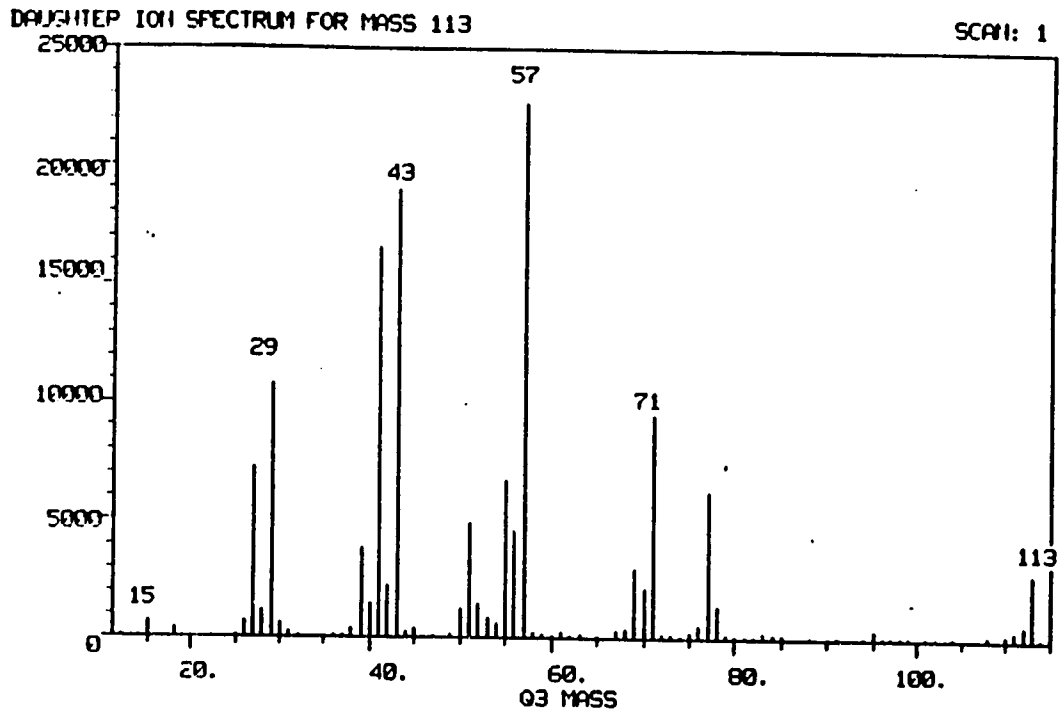

SCHAEFFER LANDFILL BAG SAMPLE (NEAT) - 5/30/86

LIBRARY SEARCH RESULTS

LIBRARY FILE: TAGA6000

NAME	FORMULA	INDEX	M.W.	RESULT

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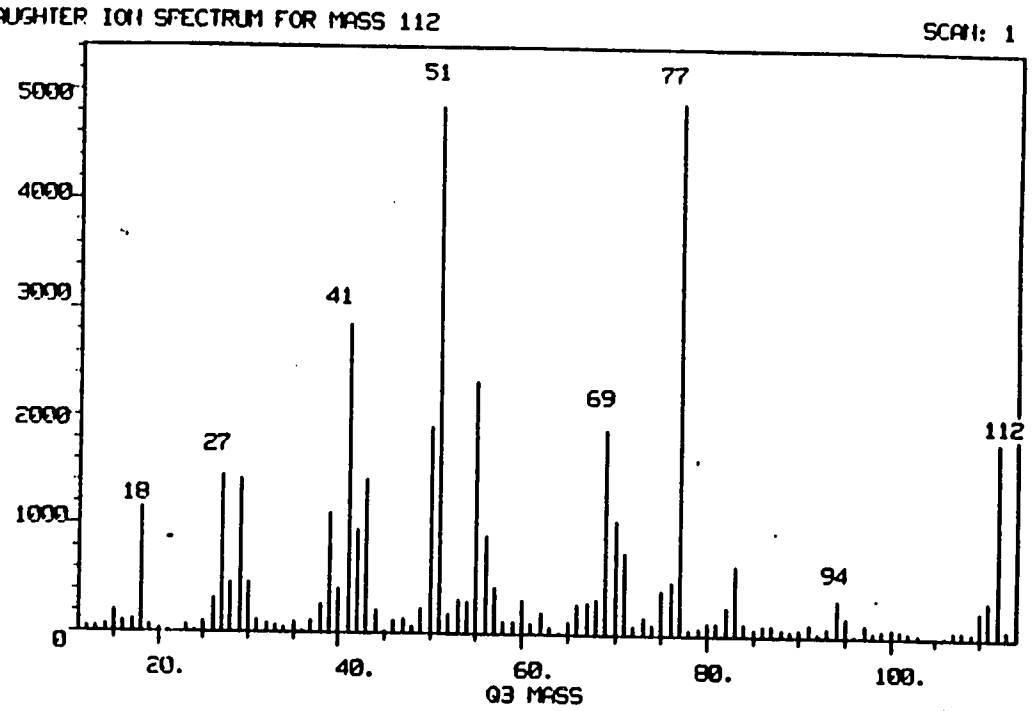
ADMINISTRATIVE RECORD

IRO 003

2452

DAUGHTER ION SPECTRUM FOR MASS 112

SCAN: 1



SCHAEFFER LANDFILL BAG SAMPLE (NEAT) - 5/30/86

LIBRARY SEARCH RESULTS

LIBRARY FILE: TAGA6000

NAME	FORMULA	INDEX	M.W.	RESULT
CHLOROBENZENE	C6.H5.CL	333	112	0.7802
CHLOROBENZENE	C6H5CL	36	112	0.7211

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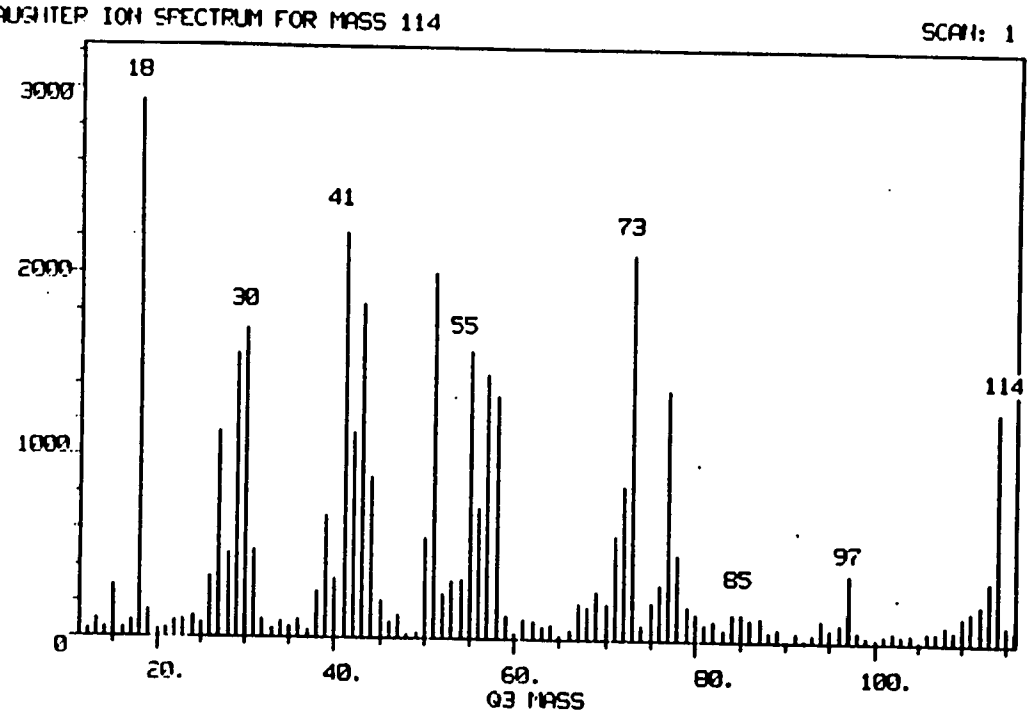
DAUGHTER ION SPECTRUM FOR MASS 114

SCAN: 1



SCHAEFFER LANDFILL BAG SAMPLE (HEAT) - 5/30/86

LIBRARY SEARCH RESULTS

LIBRARY FILE: NAGA6000

NAME	FORMULA	INDEX	M.W.	RESULT

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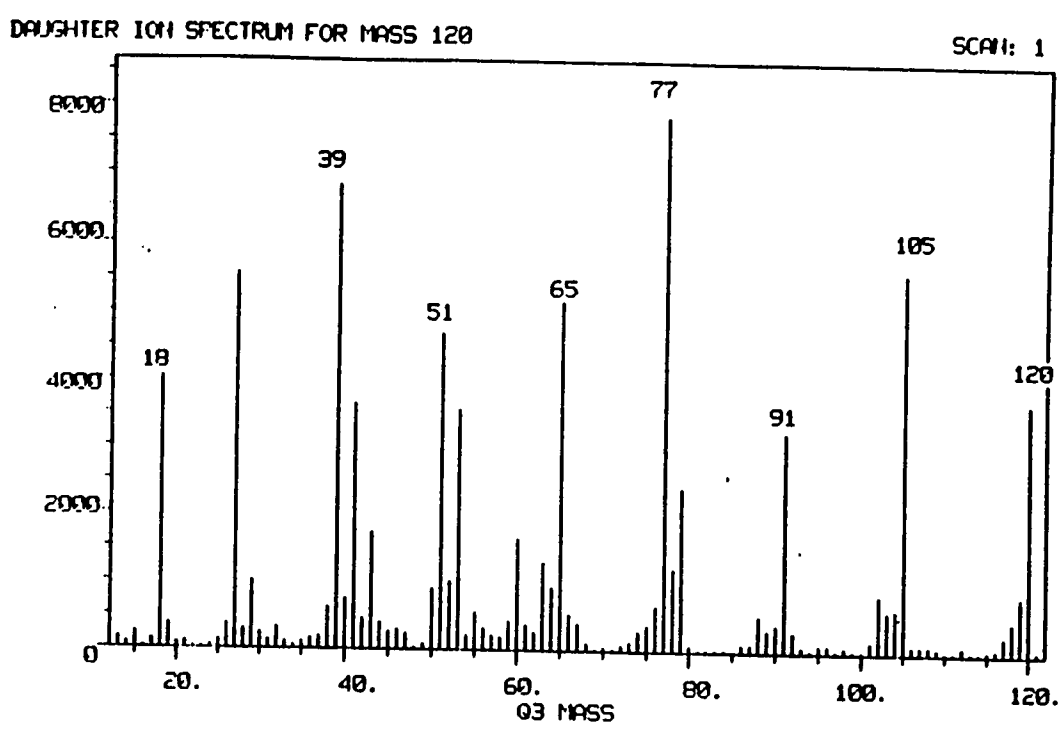
ADMINISTRATIVE RECORD



SCHAEFFER LANDFILL BAG SAMPLE (NEAT) - 5/30/86

LIBRARY SEARCH RESULTS

LIBRARY FILE: TAGA6000

NAME	FORMULA	INDEX	M.W.	RESULT
ALLYL BROMIDE	C3H5.BR	335	120	0.6594
TRIMETHYLBENZENE	C9H12	214	120	0.4152

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244

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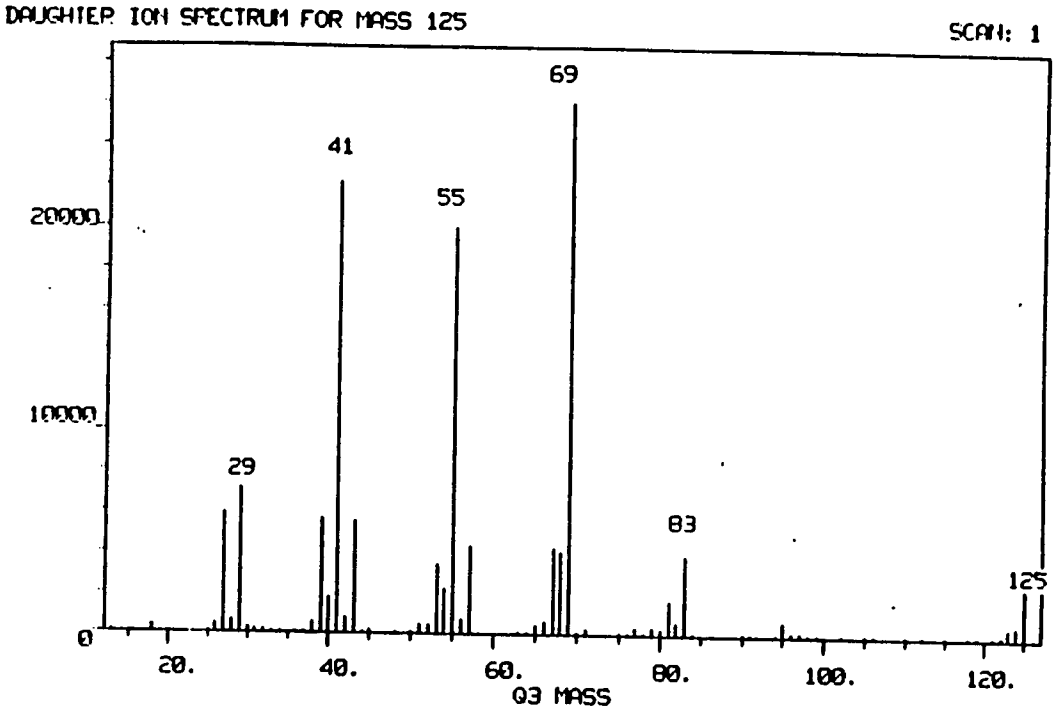
ADMINISTRATIVE RECORD

IRO 003

2455

DAUGHTER ION SPECTRUM FOR MASS 125

SCAN: 1



SCHAEFFER LANDFILL BAG SAMPLE (NEAT) - 5/30/86

LIBRARY SEARCH RESULTS

LIBRARY FILE: TAGA6000

NAME	FORMULA	INDEX	M.W.	RESULT

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ADMINISTRATIVE RECORD

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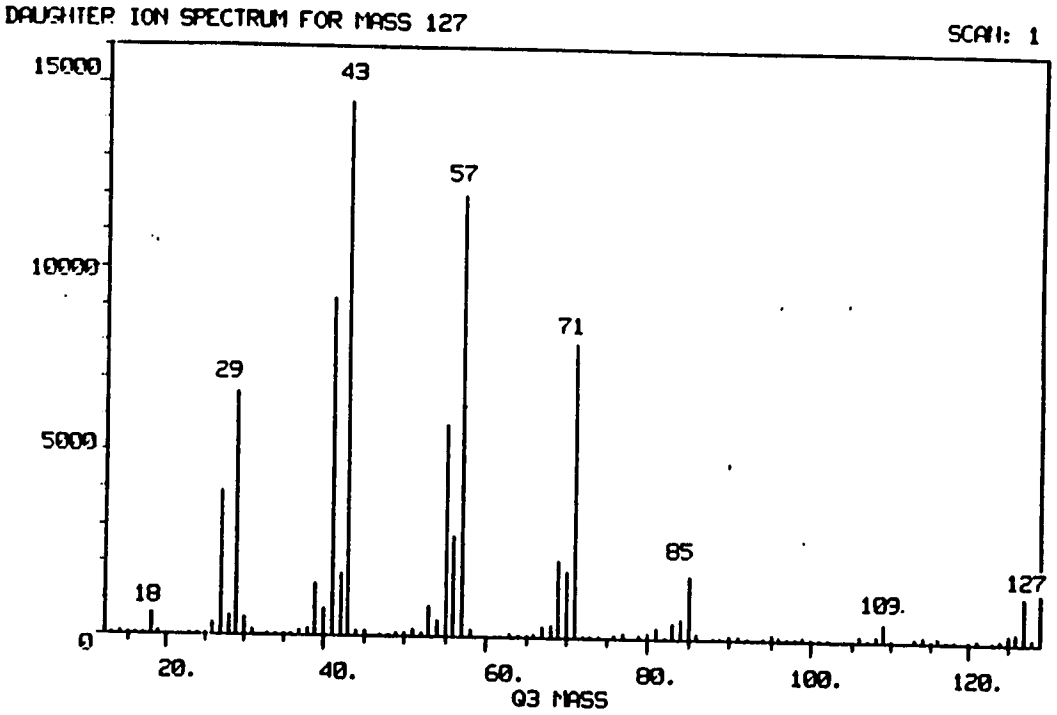
2459

DAUGHTER ION SPECTRUM FOR MASS 127

SCAN: 1



SCHAEFFER LANDFILL BAG SAMPLE (NEAT) - 5/30/86

LIBRARY SEARCH RESULTS

LIBRARY FILE: TAGA6000

NAME	FORMULA	INDEX	M.W.	RESULT
M-FLUORANISOLE	C7.H7.O.F	257	126	0.3603

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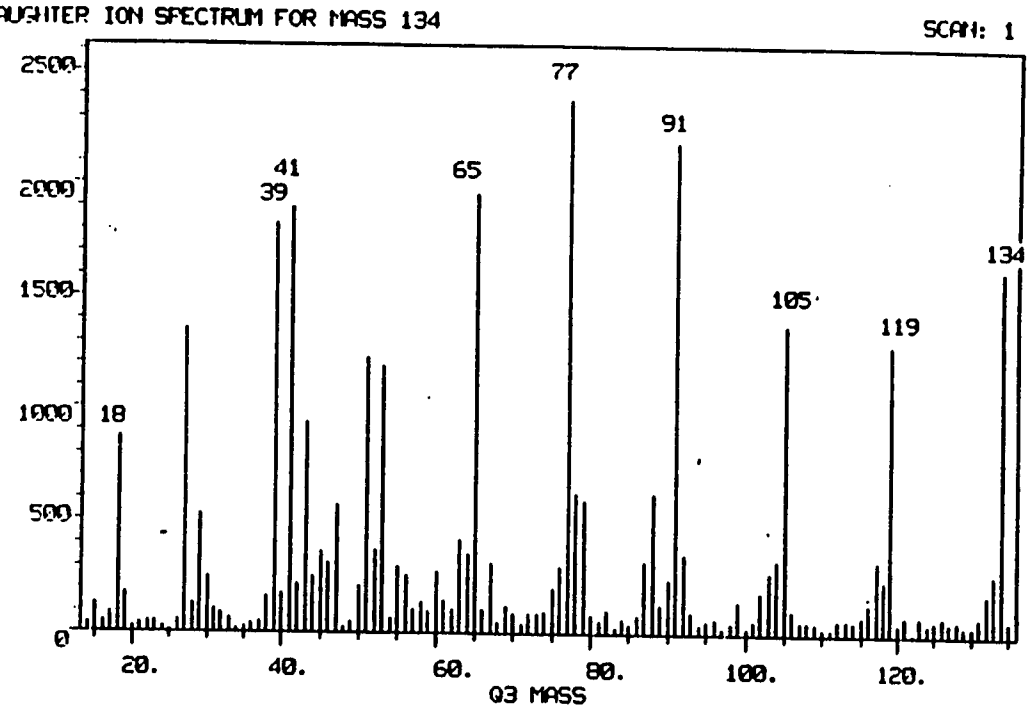
DAUGHTER ION SPECTRUM FOR MASS 134

SCAN: 1



SCHAEFFER LANDFILL BAG SAMPLE (NEAT) - 5/30/86

LIBRARY SEARCH RESULTS

LIBRARY FILE: TAGA6000

NAME	FORMULA	INDEX	M.W.	RESULT
N-BUTYLBENZENE	C10.H14	157	134	0.7338
ISOBUTYLBENZENE	C10.H14	10	134	0.5571

IRO 003

E457

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ADMINISTRATIVE RECORD

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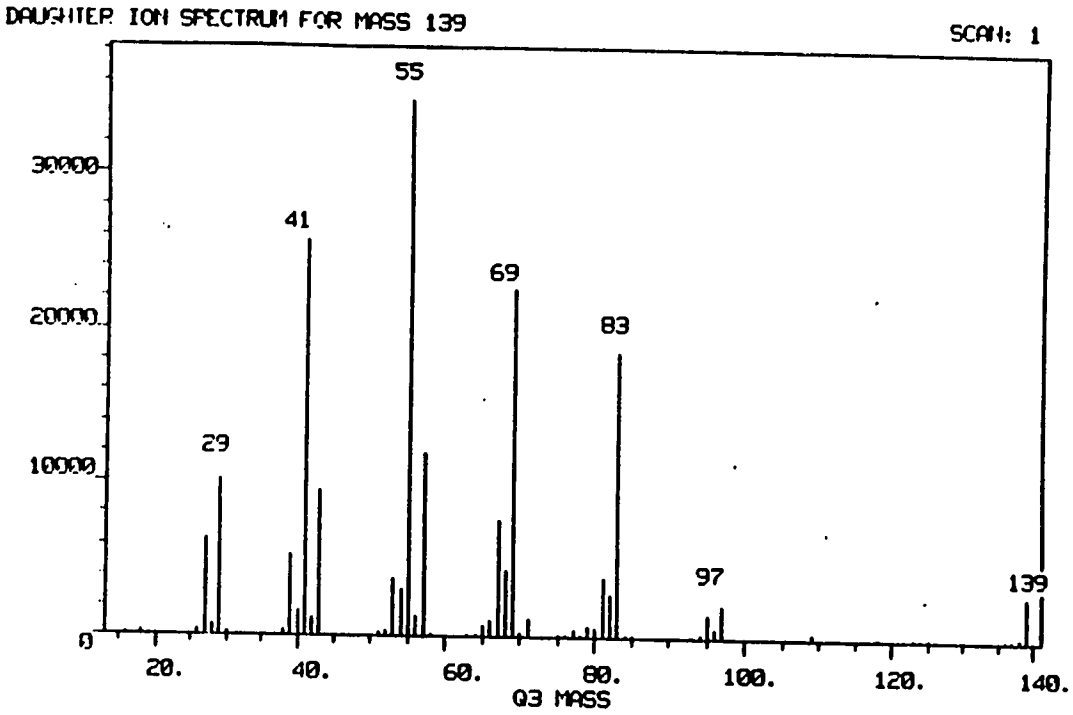
DAUGHTER ION SPECTRUM FOR MASS 139



SCHAEFFER LANDFILL BAG SAMPLE (NEAT) - 5/30/86

LIBRARY SEARCH RESULTS

LIBRARY FILE: TAGA6000

NAME	FORMULA	INDEX	M.W.	RESULT

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ADMINISTRATIVE RECORD

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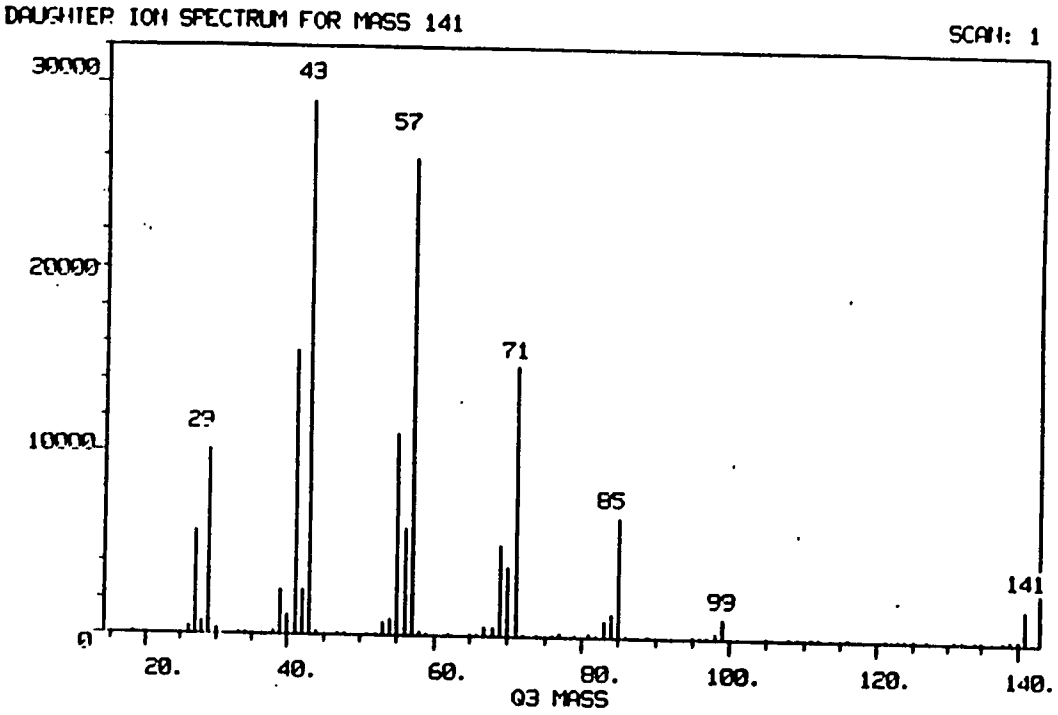
2459

DAUGHTER ION SPECTRUM FOR MASS 141

SCAN: 1



SCHAEFFER LANDFILL BAG SAMPLE (NEAT) - 5/30/86

LIBRARY SEARCH RESULTS

LIBRARY FILE: TAGA6000

NAME	FORMULA	INDEX	M.W.	RESULT

NOTICE: If the film image is less clear than this notice, it is due to the quality of the document being filmed

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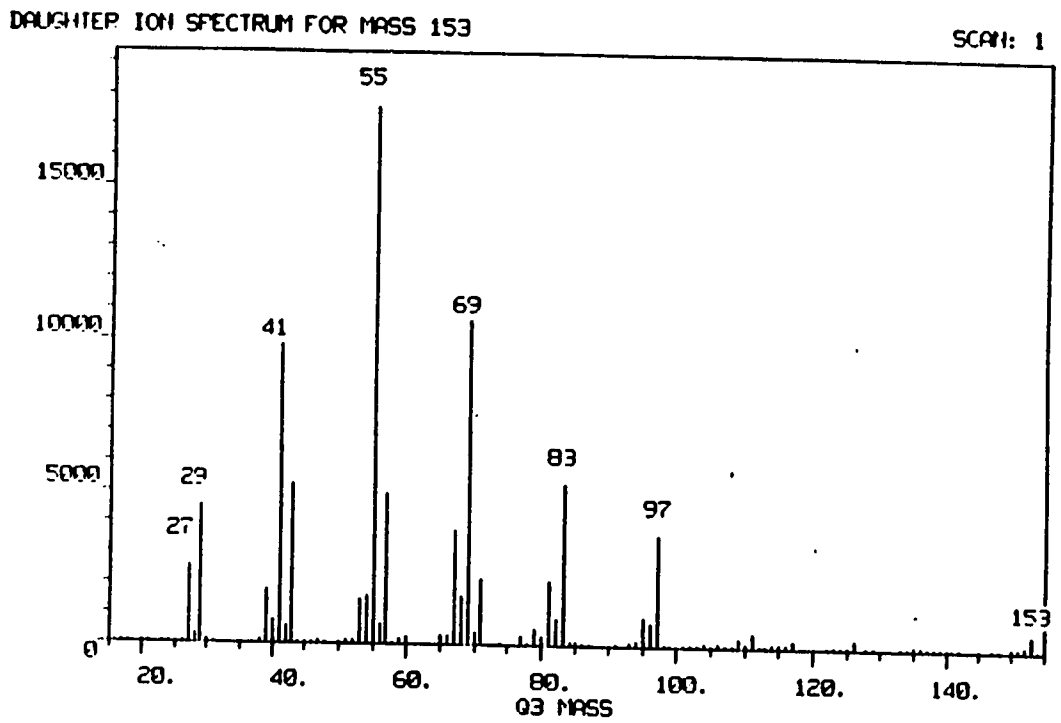
ADMINISTRATIVE RECORD



SCHAEFFER LANDFILL BAG SAMPLE (HEAT) - 5/30/86

LIBRARY SEARCH RESULTS

LIBRARY FILE: TAGA6000

NAME	FORMULA	INDEX	M.W.	RESULT
CARVONE	C10H160	26	152	0.6231
VANILLIN	C8.H8.O3	371	152	0.2673

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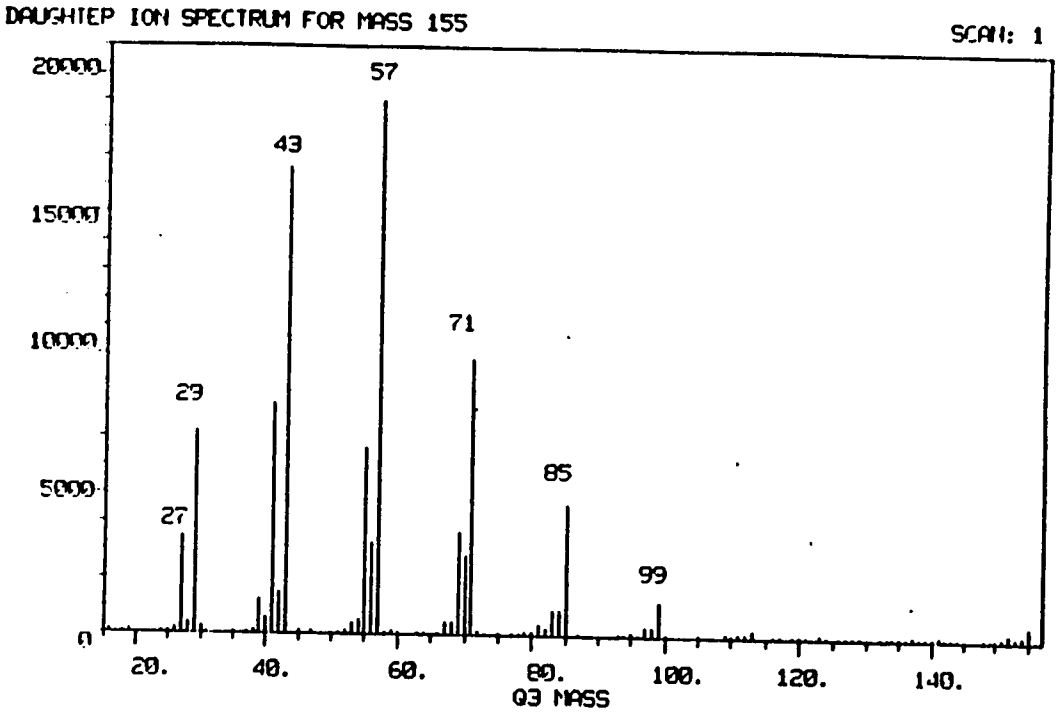
ADMINISTRATIVE RECORD

IRO 003

2441

DAUGHTER ION SPECTRUM FOR MASS 155

SCAN: 1



SCHAEFFER LANDFILL BAG SAMPLE (NEAT) - 5/30/86

LIBRARY SEARCH RESULTS

LIBRARY FILE: TAGA6000

NAME	FORMULA	INDEX	M.W.	RESULT
LINALOOL	C10.H18.O	361	154	0.3371

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ADMINISTRATIVE RECORD

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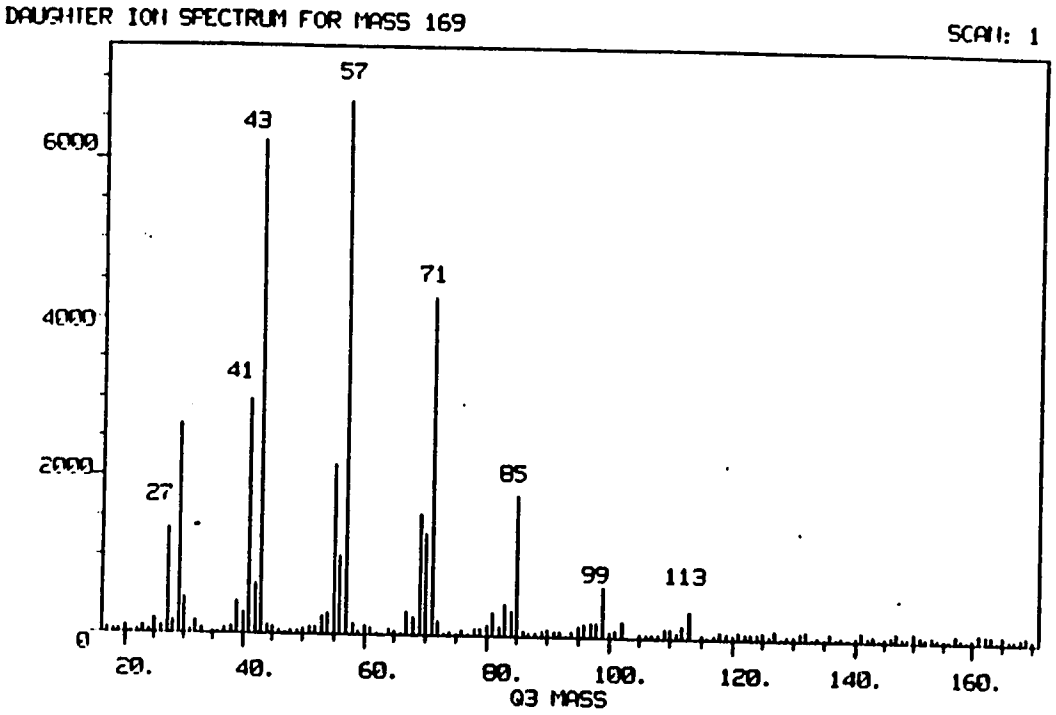
2482L

DAUGHTER ION SPECTRUM FOR MASS 169



SCHAEFER LANDFILL BAG SAMPLE (NEAT) - 5/30/86

LIBRARY SEARCH RESULTS

LIBRARY FILE: TAGA6000

NAME	FORMULA	INDEX	M.W.	RESULT
O-FLUOROETHYLBENZOATE	C9.H9.O2.F	263	168	0.5517
M-FLUOROETHYLBENZOATE	C9.H9.O2.F	258	168	0.4446
P-FLUOROBENZOATE	C9.H9.O2.F	259	168	0.3989