<table>
<thead>
<tr>
<th></th>
<th>Name of the Department</th>
<th>Pharmacology and Environmental Toxicology</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Year of establishment</td>
<td>1979</td>
</tr>
<tr>
<td>3</td>
<td>Is the Department part of a School/Faculty of the university?</td>
<td>Part of School of Basic Medical Sciences</td>
</tr>
</tbody>
</table>
| 4 | Names of programmes offered (UG, PG, M.Phil., Ph.D., Integrated Masters; Integrated Ph.D., D.Sc., D.Litt., etc.) | P.G. courses:  
i. M.D. Pharmacology (Faculty of Medicine)  
ii. M.Sc. Pharmacology (Faculty of Medicine)  
iii. M.Sc. Toxicology (Faculty of Science)  
iv. M.Sc. Environmental toxicology (Faculty of Science)- Course upgraded to M.Phil. Environmental toxicology  
M.Phil Courses:  
i. M.Phil. Environmental toxicology (Faculty of Science)  
ii. M.Phil. Neuro and Nanotoxicology (Faculty of Science)  
Ph.D Programme: Interdisciplinary |
| 5 | Interdisciplinary programmes and departments involved | i. M.Sc. Pharmacology – Departments involved - Department of Anatomy, Department of Physiology and Department of Biochemistry  
ii. Various departments of the university are involved in offering Elective subjects to M.Sc. Pharmacology, M.Sc. Toxicology and M.Sc. Environmental Toxicology courses |
| 6 | Courses in collaboration with other universities, industries, foreign institutions, etc. | i. M.Sc. Pharmacology and M.Sc. Toxicology – For project work of students –Central Leather Research Institute (CLRI), Forensic Sciences Department, Indian |
NAAC Reaccreditation - Evaluative Report
School of Basic Medical Sciences
Department of Pharmacology and Environmental Toxicology

<table>
<thead>
<tr>
<th>7</th>
<th>Details of programmes discontinued, if any, with reasons</th>
<th>M.Sc. Environmental toxicology (Faculty of Science) - discontinued during 2010. Reason - Course upgraded to the research degree – “M.Phil.. Environmental toxicology”.</th>
</tr>
</thead>
</table>
| 8 | Examination System: Annual/ Semester/ Trimester/Choice Based Credit System | i. M.D. – Annual  
ii. M.Sc. Pharmacology and M.Sc. Toxicology - Choice Based Credit System – Semester pattern |
| 9 | Participation of the department in the courses offered by other departments | This department offers  
a) Two core and one elective subjects for M.Sc. M.Tech course offered by the Nanosciences department of the Guindy campus  
b) Offered one core subject for the M.Sc. biomedical course offered by the Dept. of Endocrinology Dr.ALM.PGIBMS  
c) Offered one core subject for M.Sc. Microbiology offered by the Dept. of Microbiology, Dr.ALM.PGIBMS  
d) Elective subjects offered by this department for students of other departments of this University are: Drug therapy, Fundamentals of environmental toxicology, General principles of toxicology, Neuro and nano toxicology, Reproductive toxicology, Hepatotoxicology and Immuno toxicology. |
| 10. Number of teaching posts sanctioned, filled and actual (Professors/Associate Professors/Asst. Professors/others) | | | |
| | Sanctioned | Filled | Actual (including CAS & MPS) |
| Professor | 1 | 0 | 3 |
| Associate Professors | 2 | 0 | 0 |
| Asst. Professors | 5 | 3 | 3 |
| Others | ---- | ---- | ---- |
11. **Faculty profile with name, qualification, designation, area of specialization, experience and research under guidance**

<table>
<thead>
<tr>
<th>Name</th>
<th>Qualification</th>
<th>Designation</th>
<th>Specialization</th>
<th>No. of Years of Experience</th>
<th>No. of Ph.D./M.Phil. students guided for the last 4 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr. R. Venkatakrishna Murali</td>
<td>M.D., Ph.D.</td>
<td>Professor</td>
<td>Pharmacology</td>
<td>30 yrs</td>
<td>2 nos.</td>
</tr>
<tr>
<td>Dr. S. L. Maheswari</td>
<td>M.Sc., M.Phil., Ph.D.</td>
<td>Professor</td>
<td>NeuroToxicology and Aquatic Toxicology</td>
<td>29 yrs</td>
<td>1 no.</td>
</tr>
<tr>
<td>Dr. M. P. Balasubramanian</td>
<td>M.Sc., Ph.D.</td>
<td>Professor</td>
<td>Pesticide Toxicology</td>
<td>29 yrs</td>
<td>8 nos.</td>
</tr>
<tr>
<td>Dr. S. Karthikeyan</td>
<td>M.Sc., Ph.D.</td>
<td>Assistant Professor</td>
<td>Hepatotoxicology</td>
<td>12 yrs</td>
<td>2 nos.</td>
</tr>
<tr>
<td>Dr. Senthilkumaran Palanimuthu</td>
<td>M.D.</td>
<td>Assistant Professor</td>
<td>Pharmacology</td>
<td>7 yrs</td>
<td>Nil</td>
</tr>
<tr>
<td>Dr. G. Vijayakumar</td>
<td>M.Sc., Ph.D.</td>
<td>Assistant Professor</td>
<td>Analytical Toxicology</td>
<td>7 yrs</td>
<td>Nil</td>
</tr>
</tbody>
</table>

12. **List of senior Visiting Fellows, adjunct faculty, emeritus professors**

Adjunct professor – Dr. G. P. Dubey, Banaras Hindu University

13. **Percentage of classes taken by temporary faculty – programme-wise information**

Nil

14. **Programme-wise Student Teacher Ratio**

Not applicable since the courses are specialization subjects with intake per year of MD-1, M.Sc. Pharmacology -5 and M.Sc. Toxicology-4

15. **Number of academic support staff (technical) and administrative staff:**

<table>
<thead>
<tr>
<th></th>
<th>Sanctioned</th>
<th>Filled</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technical Officer</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Technician</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Administrative</td>
<td>1</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Assistant Section Officer</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>
16. Research thrust areas as recognized by major funding agencies
1. DST-DPRP
   a) Neurotoxicity research to assist drug development
2. UGC –SAP DRS II
   a) Pharmacology of Indian Medicinal Plants and Traditional Medicinal Preparations
   b) Toxicology of Environmental Pollutants
3. DBT
   a) Role of Metals in the Etiopathogenesis of Parkinson disease
4. UGC Hepatotoxicology

17. Number of faculty with ongoing projects from a) national b) international funding agencies and c) Total grants received. Give the names of the funding agencies, project title and grants received project-wise.

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Funding agency</th>
<th>Faculty</th>
<th>Project title</th>
<th>Grants in Rs. (Lakhs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>DST-DPRP</td>
<td>Dr.S.L.Maheswari</td>
<td>Neurotoxicity research to Assist Drug Development</td>
<td>469</td>
</tr>
<tr>
<td>2</td>
<td>DBT</td>
<td>Dr.S.L.Maheswari</td>
<td>Role of Metals in the Etiopathogenesis of Parkinson disease</td>
<td>89.6</td>
</tr>
<tr>
<td>3</td>
<td>UGC</td>
<td>Dr.S.Karthikeyan</td>
<td>Zidovudin and antitubercular drugs-induced liver damage. An investigation on</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>the influence of silibinin in modulation of toxicity in rats</td>
<td></td>
</tr>
</tbody>
</table>

18. Inter-institutional collaborative projects and associated grants received

National collaboration - For the DBT project of Dr.S.L.Maheswari entitled “Role of Metals in the Etiopathogenesis of Parkinson disease”. Institutions involved are: Dept. of Pharmacology and

a) Environmental Toxicology, Dr.ALM.PGIBMS, University of Madras, NIMHANS- Bangalore
b) International collaboration

19. **Departmental projects funded by DST-FIST; UGC-SAP/CAS, DPE; DBT, ICSSR, AICTE, etc.; total grants received.**

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Funding agency</th>
<th>Grants in Rs. (Lakhs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>UGC-SAP</td>
<td>58</td>
</tr>
<tr>
<td>2</td>
<td>DST-PURSE</td>
<td>13.4</td>
</tr>
<tr>
<td>3</td>
<td>DST-FIST level I</td>
<td>15.5</td>
</tr>
</tbody>
</table>


- state recognition
- national recognition
- international recognition

21. **Special research laboratories sponsored by / created by industry or corporate bodies**

Nil

22. **Publications:**

- Number of papers published in peer reviewed journals (national / international)- International -38 National - 4
- Monographs - Nil
- Chapters in Books - Nil
- Edited Books - Nil
- Books with ISBN with details of publishers - Nil
- Number listed in International Database (e.g Web of Science, Scopus etc.)- Nil
- Citation Index – range/average
- SNIP
- SJR
- Impact factor – range/average 1-3.5
- H index - 8
23. Details of patents and income generated

Nil

24. Areas of consultancy and income generated -

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Faculty</th>
<th>Industry</th>
<th>Area of consultancy</th>
<th>Amount RS.(lakhs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Dr.R.Venkatakrishna Murali</td>
<td>Shreya Life Sciences Pvt.Ltd.Mumbai</td>
<td>Drug development</td>
<td>5.6</td>
</tr>
<tr>
<td>2</td>
<td>Dr.S.L.Maheswari</td>
<td>Apex laboratories, Chennai</td>
<td>Drug development</td>
<td>3</td>
</tr>
<tr>
<td>3</td>
<td>Prof.M.P.Balasubramanian</td>
<td>Pharma tech, USA</td>
<td>Toxicity screening</td>
<td>0.65</td>
</tr>
<tr>
<td>4</td>
<td>Dr.S.Karthikeyan</td>
<td>EID Pary (India) Ltd., Chennai</td>
<td>Toxicity screening</td>
<td>0.94</td>
</tr>
</tbody>
</table>

25. Faculty selected nationally / internationally to visit other laboratories / institutions / industries in India and abroad

Dr.S.Karthikeyan – Visited Gulf Medical University, Ajman, UAE As Visiting Professor for 2 month in May, June-2010.

26. Faculty serving in

a) National committees
b) International committees
c) Editorial Boards
d) any other (Please specify)

Dr.R.Venkatakrishna Murali
1) Project evaluation committee member for UGC
2) Advisory committee member for UGC-SAP Padmavathi womens’ University, Thirupathi.

27. Faculty recharging strategies (UGC, ASC, Refresher / orientation programs, workshops, training programs and similar programs).

Conducted one Refresher course – Academic Staff College, University of Madras

28. Student projects

Percentage of students who have done in-house projects including inter-departmental projects – 100% - for III M.Sc. Pharmacology
Percentage of students doing projects in collaboration with other universities / industry / institute – 100% - for II year M.Sc. Pharmacology and M.Sc. Toxicology students

29. **Awards / recognitions received at the national and international level by**
   - Faculty – Prof.M.P.Balasubramanian – C.R. Krishnamurti Memorial Award – from Indian Association of Biomedical Scientist (IABMS) for 25 years of professional standing in the field of Environmental Toxicology.
   - Dr.G.Vijayakumar -FABMS Fellowship Title - by Indian association of Biomedical Scientists (IABMS)
   - Doctoral / post doctoral fellows - Doctoral - Mr.D.Ezhilarasan, under Maheva Eramus Mandus fellowship has gone to Belgium
   - Student - Nil

30. **Seminars/ Conferences/Workshops organized and the source of funding (national / international) with details of outstanding participants, if any.**
    (Details furnished in Appendix II)
    Five National Seminar cum workshops – funded by DST-DPRP
    Five National Seminar cum workshops – funded by the University of Madras.

31. **Code of ethics for research followed by the departments -**
    - UGC regulations on minimum standard and procedure for the award of M.Phil/Ph.D. degree – 2009 are followed.
    - Periodical assessment by department research committee
    - Adherence to CPSEA norms for conducting animal experiments
    - Conduct of human clinical research after presentation to Institutional Human Ethical committee evaluation

32. **Student profile programme-wise:**

<table>
<thead>
<tr>
<th>Name of the programme(refer to question no.4)</th>
<th>Applications received</th>
<th>Selected Male</th>
<th>Female</th>
<th>Pass percentage Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>M.D. Pharmacology</td>
<td>30</td>
<td>0</td>
<td>5</td>
<td>-</td>
<td>100%</td>
</tr>
<tr>
<td>M.Sc. Environmental Toxicology</td>
<td>6</td>
<td>1</td>
<td>5</td>
<td>0</td>
<td>100%</td>
</tr>
<tr>
<td>M.Sc. Pharmacology</td>
<td>15</td>
<td>7</td>
<td>8</td>
<td>86%</td>
<td>100%</td>
</tr>
<tr>
<td>M.Sc. Toxicology</td>
<td>7</td>
<td>4</td>
<td>3</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>M.Phil Environmental Toxicology</td>
<td>15</td>
<td>2</td>
<td>13</td>
<td>100%</td>
<td>85%</td>
</tr>
<tr>
<td>M.Phil Neuro and nanotoxicology</td>
<td>4</td>
<td>3</td>
<td>1</td>
<td>67%</td>
<td>100%</td>
</tr>
</tbody>
</table>
33. **Diversity of students**

<table>
<thead>
<tr>
<th>Name of the programme (refer to question no. 4)</th>
<th>% of students from the same university</th>
<th>% of students from other universities within the state</th>
<th>% of students from universities outside the state</th>
<th>% of students from other countries</th>
</tr>
</thead>
<tbody>
<tr>
<td>M.D. Pharmacology</td>
<td>Nil</td>
<td>60%</td>
<td>20%</td>
<td>20%</td>
</tr>
<tr>
<td>M.Sc. Environmental toxicology</td>
<td>100%</td>
<td>Nil</td>
<td>Nil</td>
<td>Nil</td>
</tr>
<tr>
<td>M.Sc. Pharmacology</td>
<td>74%</td>
<td>13%</td>
<td>13%</td>
<td>Nil</td>
</tr>
<tr>
<td>M.Sc. Toxicology</td>
<td>86%</td>
<td>Nil</td>
<td>14%</td>
<td>Nil</td>
</tr>
<tr>
<td>M.Phil Environmental Toxicology</td>
<td>80%</td>
<td>20%</td>
<td>Nil</td>
<td>Nil</td>
</tr>
<tr>
<td>M.Phil Neuro and nanotoxicology</td>
<td>50%</td>
<td>Nil</td>
<td>50%</td>
<td>Nil</td>
</tr>
</tbody>
</table>

34. **How many students have cleared Civil Services and Defence Service examinations, NET, SLET, GATE and other competitive examinations? Give details category-wise**

GATE - 1 – R. Raghu (Ph.D. Scholar)
SLET – 1 – R. Balaji (Ph.D. Scholar)
NET – 1 – G. Bhavani (Ph.D. Scholar)

35. **Student progression**

<table>
<thead>
<tr>
<th>Student progression</th>
<th>Percentage against enrolled</th>
</tr>
</thead>
<tbody>
<tr>
<td>UG to PG</td>
<td>Nil</td>
</tr>
<tr>
<td>PG to M.Phil.</td>
<td>Nil</td>
</tr>
<tr>
<td>M.Phil. to Ph.D</td>
<td>21%</td>
</tr>
<tr>
<td>PG to Ph.D</td>
<td>3%</td>
</tr>
<tr>
<td>Ph.D to Post-Doctoral</td>
<td>11%</td>
</tr>
<tr>
<td>Employed</td>
<td>40%</td>
</tr>
<tr>
<td>Campus selection</td>
<td></td>
</tr>
<tr>
<td>Other than campus recruitment</td>
<td></td>
</tr>
</tbody>
</table>

36. **Diversity of staff**

<table>
<thead>
<tr>
<th>Percentage of faculty who are graduates</th>
</tr>
</thead>
<tbody>
<tr>
<td>of the same university</td>
</tr>
<tr>
<td>from other universities within the State</td>
</tr>
<tr>
<td>from universities from other States</td>
</tr>
<tr>
<td>from universities outside the country</td>
</tr>
</tbody>
</table>
37. **Number of faculty who were awarded M.Phil., Ph.D., D.Sc. and D.Litt. during the assessment period**: Nil

38. **Present details of departmental infrastructural facilities with regard to**
   a) Library - Department library with more than 300 books
   b) Internet facilities for staff and students - Browsing lab with 6 units all having internet facility
   c) Total number of class rooms - 1
   d) Class rooms with ICT facility - 1
   e) Students’ laboratories - 1
   f) Research laboratories - 5

39. **List of doctoral, post-doctoral students and Research Associates : Enclosed**
   a) from the host institution/university -
      1. Senthikumaran Palanimuth
      2. D.Ezhilarasan
      3. K.Barathi raja
      4. B.Jesudas
      5. G.Bhavani
      6. Balaji
   b) from other institutions/universities –
      1. B.Senthilkumar
      2. V.S. Harish Kumar
      3. S.Vijayaprakash
      4. V.Sathish Kumar
      5. R.Raghu
      6. P. Tamil Selvan
      7. B.Lokesh Kumar
      8. K.Sindhu

40. **Number of post graduate students getting financial assistance from the university.** - Two

41. **Was any need assessment exercise undertaken before the development of new programme(s)? If so, highlight the methodology.**

   Exercise undertaken before introduction of M.Sc.Toxicology. Based on the requirement of toxicologist for any industry that deals with products that can have an impact on living organisms, this course was introduced. M.Sc. Pharmacology course was introduced considering the manpower development for drug industries and medical institutions.
42. Does the department obtain feedback from
   a. Faculty on curriculum as well as teaching-learning-evaluation? If yes, how does the department utilize the feedback?
   After department faculty discussion regarding the advances in each subject, changes are made in the syllabi.

   b. Students on staff, curriculum and teaching-learning-evaluation and how does the department utilize the feedback?
   Yes. The feedback is used for making changes in the teaching patterns and conduct of practical classes.

   c. Alumni and employers on the programmes offered and how does the department utilize the feedback?
   YES – Representation from Industries are members of the Board of Studies

43. List the distinguished alumni of the department (maximum 10)
   Dr. V. Kanagasabai – Principal, Madras Medical College, Chennai.
   Dr. C. Vamsadara – Director of Medical education, Tamil Nadu.
   Dr. T. Ashok Kumar – Govt. Nagercoil Medical College, Nagercoil.
   Dr. Musthapa – Govt. Medical College Coimbatore.
   Dr. K. Chandrasekaran – Scientific advisor, Shreya Life Sciences, Mumbai.
   Dr. K. Krishnamurthi – Senior Scientist – NEERI, Lucknow.

44. Give details of student enrichment programmes (special lectures / workshops / seminar) involving external experts.
   a) Workshop cum seminars are arranged every year for the benefit of students and research scholars.
   b) Research training – Students from other institutions do project work in the laboratories using high-tech equipments.

45. List the teaching methods adopted by the faculty for different programmes.
   I. Regular chalk-board lecture
   II. Power-point presentation using LCD projectors
   III. Interactive sessions and tutorials
IV. Hands-on practical sessions
V. Weekly Journal club discussions
VI. Pedagogy
VII. Weekly seminars
VIII. Demonstrations with Specimens
IX. Periodical assessment by giving assignments

46. How does the department ensure that programme objectives are constantly met and learning outcomes are monitored?
By periodical sessional tests, assignment, quiz, tutorials and counseling.

47. Highlight the participation of students and faculty in extension activities.
Student are motivated to take up socially relevant topics for the project work like evaluation of the drugs (including traditional medicine) for the efficacy, clinical studies and studies related to environmental pollutants.

48. Give details of “beyond syllabus scholarly activities” of the department.
The National Centre for Neurotoxicity Research to Assist Drug Development – of the department is involved in research related to heavy metal toxicity and gets samples for analysis from hospitals to fix the etiology evaluation of the prognosis after treatment.
Under Consultancy projects, students are trained for taking up research in the future

49. State whether the programme/ department is accredited/ graded by other agencies? If yes, give details.
The Department has been recognized for establishment of the National facility for Neurotoxicity Research to Assist Drug Development by DST.
The Department has been recognized by Medical Council of India (MCI) to offer M.D. Pharmacology course

50. Briefly highlight the contributions of the department in generating new knowledge, basic or applied.
The department is the first of its kind in starting PG courses in Environmental Toxicology and Toxicology as well as starting the M.Sc. Pharmacology course in
Tamilnadu after a gap of more than 25 years and thus has contributed for the man
power development in socially relevant fields essential for providing health care. The
National Centre for Neurotoxicity Research to Assist Drug Development is unique in
providing infrastructure facility with high-end equipments to cater for basic as well
as applied research in the specific fields of neurotoxicology and neuropharmacology.
With the faculty having medical and biology expertise, the department caters for the
research needs in Pharmacology and Toxicology.

51. **Detail five major Strengths, Weaknesses, Opportunities and Challenges (SWOC) of the department.**

**Strengths:**

- Faculty includes experts in Pharmacology as well as Toxicology, a combination
  that does not exist anywhere in India.
- The department has infrastructure to carry out basic as well as applied research.
- The research areas of department namely pharmacology and toxicology are much
  wanted fields by industries that deal with drugs and chemicals.
- Since the students are given hands-on training in evaluation procedures, the job
  opportunity is bright and many of the students are well placed in teaching/research
  institutions and colleges.
- The department caters for the societal needs in the form of carrying out
  investigations related evaluation as well as identification of toxicity and hence is
  approached by health care providers for specific investigations.

**Weakness:**

- Shortage of staff.
- Since the department is offering specialization subjects of Pharmacology and
  Toxicology which requires perseverance and involvement, motivated students
  interested in these fields are lacking.

**Opportunities:**

- Having got the well established infrastructure and expertise, the department has
  got the scope to become a Centre for Advanced studies.
• Since the department dealing with pharmacological analysis, many new drug formulations and traditional medicinal preparations can be screened for the efficacy and hence industrial collaboration is possible.

• Toxicity identification is carried out in this department and hence this department can become a referral centre for other institutions to identify and quantify toxicants.

• With the available infrastructure, the department can be training centre for manpower development in field of Pharmacology and Toxicology.

• Prospect for Industrial collaboration is high especially with those industries dealing with drug, food and chemicals like pesticides.

Challenges:

• The rate of introduction of new drugs and chemicals is high at present and the quantum of work needed for standardizing the procedure for evaluation of the effects of them is enormous.

• The data obtained needs to be highly reproducible for international acceptance and the recruitment of technical personnel with experience is essential for this task.

• The budget provision needs to be adequate to meet the expenses for maintaining the high-end equipments and purchase of chemicals/kits.

• Considering the money involved and time required for screening the Pharmacological/Toxicological effects of a new compound, priority needs to be given and this is a challenging job.

• Finding the mechanisms underlying the biological effects of compound is essential for improving the quality of a new compound and since the department is involved in such a type of research, getting a comprehensive idea of these mechanisms is a challenging task.
52. **Future plans of the department.**

a. To further equip this department so that it can be centre for drug discovery/designing formulations.

b. To establish collaboration with hospitals for conducting clinical trials.

c. To develop the department as a referral centre for toxicant/toxicity identification.

d. To expand the investigative procedures to cater for the different avenues in toxicology.

e. To arrange more training programmes for conducting research in Pharmacology and Toxicology.